First Edition

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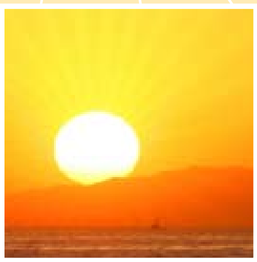
LEX HELIUS

The Law of Solar Energy

A Guide to Business and Legal Issues



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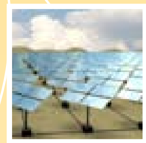
The Law of Solar Energy

A Guide to Business and Legal Issues



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WELCOME TO

LEX HELIUS: THE LAW OF SOLAR ENERGY

Dear Member of the Solar Community,

As technologies develop and commercial acceptance grows, solar photovoltaic installations are increasingly providing a viable alternative for the small-scale distributed generation of electricity to supplement more traditional, polluting sources. The growth of the solar industry in the United States over just the past two years has been phenomenal. Having a rooftop solar photovoltaic installation on corporate headquarters, major distribution centers, and other high-profile real estate has become a significant way for major global corporations to demonstrate their commitment to a cleaner environment. New sources of investment capital are flooding into this niche, and power buyers large and small have been drawn to solar as a way of demonstrating their independence from traditional generation sources and desire to play a part in moving the United States toward a more independent future. States across the country have moved to fill the federal leadership vacuum, in many cases enacting renewable portfolio standards and state renewable energy tax credits, which are critical to the continuing development of our solar resources. The industry is vibrant.

Nonetheless, distributed generation solar projects, like other renewable generation projects are subject to a plethora of real property issues, regulatory and permitting requirements, interconnection, and power purchase negotiations, financing challenges, tax matters, and construction contracting.

Recognizing these challenges, and as part of our commitment to the growth and success of the renewable energy industry, Stoel Rives developed its first *Law of …* publication in 2003. We now introduce *Lex Helius: The Law of Solar Energy*, the newest installment in our continuing efforts to provide easily accessible information for individuals and companies interested in growing U.S. renewable energy resources. This guide contains insights we have gained from practical experience assisting participants in numerous solar photovoltaic projects covering a diverse range of sizes and installations, as well as from our 15 years of experience serving the U.S. renewable energy industry.

We hope you find this information useful.

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LEX HELIUS: THE LAW OF SOLAR ENERGY
—Introduction—

During 2007, solar energy appeared to pass the tipping point as a viable and effective means of renewable energy generation. However, because years of groundwork are not unusual before contracts are even negotiated and signed, many solar energy projects currently in development have been in the pipeline, if not on the radar, for a long time. Today, projects are being initiated, constructed, and placed in service at a faster and faster rate, and in greater and greater generating capacities. Solar in all its variations—photovoltaic, thermal, distributed generation, and utility-scale—is a growing supplement to America's energy generation needs.

From a legal perspective, however, solar energy, particularly in its distributed generation, photovoltaic ("PV") form, presents new and different challenges for attorneys and their clients who are trying to put solar PV projects on the ground and rooftops of the United States. Most new areas of law are an evolutionary growth from other areas, and there is a strong desire to build on the knowledge gained from prior experience and to find analogies that can be easily applied to the new area. Unfortunately, the legal issues involved in solar PV development and energy generation do not readily lend themselves to this process. Although a lease is still a lease, the range of issues that must be considered in putting together a solar PV site lease is unlike those presented in the standard commercial real estate lease model. Similarly, a power purchase agreement ("PPA") is still a power purchase agreement, but a solar PV PPA contemplating the direct sale of output to a single purchaser—often an individual or a small company—differs dramatically from the historical model of a PPA between a massive generating source and a purchasing public utility.

This installment in Stoel Rives' *Law of . . .* series provides individuals interested in the development of solar resources with tools and insight into how various legal issues may play out. For example, as mentioned above, a lease is still a lease and a PPA is still a PPA. Even in a solar installation project, an extremely simplified form of one or the other may be used; however, the toll charge is that one of those documents will be made more complicated because it will need to address all of the unique issues presented by a solar energy project. In addition, this approach may not be sufficient if the building or site owner (the "host") is different from the individual or company purchasing the output of the solar generating facility (the "purchaser"). In this split-ownership situation, unique issues that affect only the host will need to be addressed in the site lease, while unique issues that affect only the purchaser will need to be addressed in the power purchase agreement. If one aphorism is particularly true in solar energy distributed generation projects, it is that there is no free lunch.

This book primarily focuses on those aspects of solar electric generation unique to distributed generation facilities. These facilities are generally referred to as "rooftop solar" or "ground-mount solar" and tend to be smaller solar generation facilities—primarily "solar photovoltaic" or "solar PV" installations. However, some discussion of issues unique to larger, utility-scale projects is provided. For a fuller discussion of the issues presented by a "utility-scale" renewable energy facility, see *The Law of Wind*.

In addition, we want to remind readers that a full analysis of the relevant tax issues and considerations is beyond the scope of *Lex Helius*. We briefly mention that tax considerations exist and occasionally point out situations in which specific tax considerations may influence negotiation of the PPA, but no effort has been made to present a comprehensive discussion of these issues. Under existing conditions, the tax benefits available from investing in a solar PV project are a substantial portion of the economic foundation for the project. Consequently, any party considering becoming involved in a solar PV project in any capacity, but particularly as a project owner, should consult with their own tax advisors.

Chapter One
LEX HELIUS: THE LAW OF SOLAR ENERGY
—Solar Project Property Rights: Securing Your Place in the Sun—

Kathleen J. Doll, Janet F. Jacobs, Howard E. Susman

Developing and operating a successful solar energy project requires more than having the latest solar technologies. Low-maintenance, high-return projects start with leases and easements that ensure long-term site rights, undisturbed access, and exposure to solar rays, and offer flexibility for project modifications based on rapidly emerging technologies. The form and substance of solar leases and easements vary based on the type of system (Photovoltaic ("PV") or concentrated solar power ("CSP"), for example), the type of installation (rooftop or ground-mount), and the type of landowner (not-for-profit, commercial, or residential). In light of these and other variables, this chapter focuses on a few common but key issues: establishing the scope of rights and property under a site lease, easement, or government right-of-way; addressing critical title problems; and addressing water rights, statutory solar easement requirements, and other property matters.

I. Distinguishing Land Rights and Identifying Project Needs. Among the first steps in developing a solar project is securing rights to construct, operate, and maintain the project. Typically site rights are most easily established through a lease or easement agreement, though for large, utility-scale CSP projects, purchasing fee title to a parcel may have economic and water rights advantages. For rooftop PV systems and small-scale ground-mounted systems, an easement agreement offers secure use rights to property or buildings that are also occupied and used by others. Large-scale CSP projects may be better served by leases that secure exclusive occupancy for the project. Project developers should examine their project needs in terms of spatial requirements; exclusivity; the distribution, transmission, or use of the power generated by the project; energy storage; and resource demand (such as water, surplus power supply, and thermal energy storage).

A. The Solar Project Property Agreement.

1. The Purpose and Scope of the Interest. Lease agreements provide the broadest occupancy and use rights for a project site because they give the developer the right to possess and use the property undisturbed by the landowner or third parties. Typically the developer does not share the property with any other occupant, and the developer has unrestricted access to and from the property. Lease agreements are ideal for CSP projects and ground-mounted systems when the landowner conducts only minimal activities on the property, such as grazing or minor agriculture, or when the property is unoccupied. On the other hand, leases may be less suitable for certain rooftop PV systems or shared spaces, like garages and parking lots, because the developer is not the only occupant of the space. In these situations, a lease that gives the developer control of the site, and the coextensive responsibility for the site, may exceed the needs and comfort level of many developers.

Easements can be ideal agreements for rooftop and smaller-scale PV projects when the project developer and the project share a larger space with the landowner or third parties. An easement is a real property interest whereby the landowner grants to the developer a real interest in using the property, so it is more than just a license or revocable permission to use the property or conduct an activity on the property. Instead, it secures, in writing, to the developer a right to the property and is defined by a scope of uses, exclusivity (or nonexclusivity), a fixed term, and certain responsibilities and rights of each party to the easement.

Easements are well-suited for rooftop or shared-space installations because they enable the developer to use a portion of a larger piece of property or building, and limit the developer's responsibility for areas outside of its use.

2. **The Scope of Property Subject to a Solar Project Property Agreement.** A developer of an expensive and sensitive solar power system will typically seek to maximize the amount of land subject to a lease to protect the system from dust, dirt, debris, and vandalism and to provide flexibility in selecting the precise location for the system and any ancillary facilities. However, unlike wind projects and some ocean and tidal projects, solar projects are land-intensive. A typical wind project uses, on average, one acre to produce one megawatt of energy. A wind developer might lease a 50-acre parcel, use 10 percent of it, and assure the landowner that it may freely use the remaining portion for agriculture while profiting from the wind power produced on the land. On the other hand, CSP projects require five acres for every megawatt produced, leaving the landowner with less open space for its own use and, consequently, greater motivation to limit the amount of land subject to the lease agreement and a greater expectation of rents from the project.

3. **Potential Resolutions to the Scope of Land Requirements.** In utility-scale CSP solar projects, there are few alternatives to leasing large amounts of land and retaining exclusive control over those lands for the life of the project. Unlike wind development projects, in which the landowner retains the right to farm and use the property not occupied by wind facilities, CSP projects may take large amounts of land out of agricultural or other active use. To ensure the cost-effectiveness of large-scale projects, developers will want to seek out lands with low agricultural, grazing, or mineral value, and research the value of the land and its potential uses to negotiate a lease that provides value to the landowner and profits to the developer.

When it is not possible to select land with low alternative-use value, resolving the possible conflict regarding the amount of land subject to a lease agreement will likely involve structuring payment terms under a scheme that ties lease payments to the amount of land used and the amount of energy produced by the project. In addition, other devices may give the landowner comfort that the developer will minimize the project's impact on the land and make available any unused space for other uses by the landowner. For example, a lease may provide:

- A minimum annual rent payment based on the amount of acreage under the lease. In an agricultural area, this rent may be based on the land's agricultural value.
- A megawatt-based payment if the energy produced by the project exceeds the minimum annual rent payment, so that the landowner reaps the rewards of the sun but is not penalized if it is cloudy for months.
- A consultation provision whereby the developer consults with the landowner during the scoping stage regarding the location of the project and its related facilities. Consulting with landowners goes a long way toward assuring them that their land will be used efficiently and in the least intrusive manner possible.
- A phased approach to development in which the developer leases a large amount of land but then releases lands that are not necessary for the project.

4. **Easements: Project-wide and Ancillary Rights.** The benefits of an easement for a rooftop or ground-mounted system project may be the same as its drawbacks because the developer does not exclusively possess the right to the property. An exclusive easement will give a developer the sole right to use a portion of the landowner's property, but when a project is located on a roof or over a parking garage, in order to protect the developer's investment, the easement must also ensure that the landowner and third parties will not interfere with the developer's use. Key components of a solar project easement include, among others:

- *A Specific Term:* Traditionally, easements are perpetual in nature, whereas leases are established for a set period of time. Developers using an easement will want to incorporate a term of 20 to 30 years, as they would under a lease.

- *A Right to Install Fixtures and System Equipment:* As with a solar project lease, an easement should include explicit rights to install system equipment and related fixtures that remain at all times the property of the developer. The right to use a rooftop or a portion of land is not worth much without the right to install the necessary equipment on that property.

- *A Clearly Delineated Scope:* Rooftop projects and projects sharing common boundaries with unrelated facilities (for example, box stores, parking lots, and garages) may require only portions of the building for the actual project, but the developer and its installer will need access to and from the project area, construction equipment areas, and utility rights. These rights should be clearly delineated in the agreement to protect the developer's investment and put others on notice that even if the store is closed or a stairwell is off-limits to the public, the developer's rights to access and use those areas are secured.

As part of the scoping of a project in a shared-use situation, developers will want to give careful consideration to the myriad uses and needs they may have throughout the construction, installation, operation, and maintenance of a project. Construction, ongoing access, and the right to move, repair, and replace equipment are just a few of the considerations to take into account when crafting an easement for the life of a project.

For projects using a lease agreement, that agreement should also include access, transmission, and other rights to use the property. Developers should work with the landowners to create mutual no-interference provisions and establish access and use rights that protect the developer's project while accounting for other ongoing uses or needs of the property.

Finally, with rooftop and parking structure installations come certain considerations not applicable to rural CSP system installations. Project site agreements should account for damage to systems from vandalism or from the landowner's invitees or others; responsibility for roof or parking lot maintenance, including any costs associated with resultant system shutdowns; and ongoing access to sunlight. (For more on this topic, see Section III.B.) These and other considerations should be part of the early scoping and project planning stage of development.

B. **Alternative Land Rights: Fee Interests; Federal and State Lands.** CSP systems are uniquely suited for large swaths of flat land. In fact, with current technology, the slope of most project sites should not exceed 1 percent. Relatively flat, wide open spaces in areas with plentiful sunshine call to mind the American Southwest and the plains states (western Kansas, eastern Colorado, Nevada, Arizona, New Mexico, and western Texas). These lands are frequently owned by private landowners, but more often they are owned by the federal or state government, or they are Native American tribal lands.

State and federal lands are the jurisdiction of the departments of state lands and the Bureau of Land Management, respectively. Each state and the federal government has a unique scheme for leasing or licensing its public lands. Many of these departments are well-acquainted with granting grazing or mineral rights, but the installation of large-scale solar projects is, at present, foreign to many of them. Developers should explore the various schemes available from the state or federal government for the land at issue. A 10-year grant of a right-of-way may be less secure than a long-term lease, but a long-term lease may require a public auction procedure or other public process that could add months to a project development schedule. Each option for securing site rights on public lands should be examined, and any potential drawbacks based on time, lack of exclusivity, and costs should be evaluated to ensure that the project's long-term value is maintained and that the investment is protected from vandalism, potentially disruptive uses, or other interference during the life of the project.

Leasing or obtaining a right-of-way on Native American tribal land is an attractive possibility in the American Southwest where wide open spaces with a steady supply of solar radiation are the norm. Developers should be aware that leases and rights-of-way on Native American tribal land require approval by the Bureau of Indian Affairs ("BIA"), and any agreement that encumbers tribal land for a term of seven years or more also triggers BIA review. Projects sited on Native American tribal land are also subject to federal environmental and other statutory review requirements. For example, projects on Native American tribal land will almost always require an environmental assessment under the National Environmental Policy Act. Thus as part of the initial siting evaluation of a project, developers should assess sacred sites (including burial grounds, native plant harvesting areas, and ceremonial locations). Developers should consult with the tribe itself regarding unique or archaeological resources on the proposed site because each tribe is in the best position to evaluate and determine which sites have cultural relevance and to weigh the potential issues associated with leasing such lands for solar projects.

When exploring potential projects on Native American tribal land, as with federal lands, developers should account for the time that likely will be involved for federal agency review and approval, plus any associated environmental and cultural resource studies. These may add significant cost and time to a project's development period and construction. Attorneys, local staff, and tribal contacts who are knowledgeable in tribal land leasing requirements and the intricacies of permitting and siting projects on particular tribal land are invaluable resources for navigating the statutory requirements and any review or permits that are specific to the land at issue.

II. Overcoming Title Roadblocks. Securing an interest in property for a solar project requires more than just a signed agreement. If a rooftop or CSP project site has leases, easements, mineral rights, or other encumbrances on it, the project developer takes its interest in the land or site subject to those existing rights. If title to the land were to fail after construction of the project, a developer could face significant losses and defense costs. Consequently, the savvy developer should request and obtain a search and examination of the title to the lands on which a solar energy project will be sited, and purchase a policy of title insurance representing the amount of its investment in the project. A survey of the land is also advisable. These principles apply equally to a new acquisition or the financing of an existing solar energy facility.

A. Title Reviews. Currently, a typical solar project rarely involves more than two or three landowners. It is always necessary to obtain all documents recorded in the public record relating to the proposed project lands to (1) determine the person or entity vested in the title, (2) determine whether the title is subject to liens or mortgages that create unacceptable risks to the solar project, and (3) discover all defects or other encumbrances, such as easements for utilities, road rights-of-way, mineral and timber rights, or other interests held by people or entities other than the landowner that might prevent construction of the project as planned. It is critical to obtain the title information as soon as possible and review it thoroughly to make certain that all interests of record are discovered, disclosed, and analyzed carefully. Understanding the title information and how it will impact a particular project can make the difference between successful execution of a plan and a lingering problem.

B. Determining Whether to Undertake Curative Measures. Once all of the information contained in the preliminary commitments for title insurance have been reviewed, it is necessary to cull those title issues that must be corrected or cured from those that will not impair the vitality of the project and therefore may be permitted to remain on the title. If a leasehold or easement interest is obtained from someone claiming to own the land, when, in fact, the fee simple title of record is vested in another, the title company will require correction of the title before a policy can be issued. Most often mortgages must be addressed in some manner that will permit the lender's interest to coexist with the project. Easements or rights-of-way can also be problematic for on-the-ground solar projects—some must be adjusted to allow construction of the proposed project, whereas others may not create a risk to the project at all. Understanding the interconnectedness of these interests is imperative to a successful solar project.

C. Curing Title Defects. The best start to the curative process requires selecting and preparing documents based on each type of title issue. For existing mortgages on the property, developers should work with their attorneys to evaluate whether a subordination agreement is required, or if a nondisturbance agreement will do. For existing easements, the developer should evaluate whether a consent and crossing agreement is necessary, or if the easement holder will modify its easement to allow the solar project or related facilities to cross or overlap its easement area.

A utility, a lender, another landowner, or some other person or business with an interest in the title to the project property may not always be interested in helping to solve the developer's title problem. They would just as soon not return a call and may avoid dealing with the matter entirely. How do you get their attention? How can solutions be proposed in the most nonthreatening manner possible? You must be able to negotiate with people in an effective manner. Problems can often be solved with help from a knowledgeable title underwriting counsel. It is important to understand the issues around third parties and learn how best to navigate them.

D. Mineral Rights. Mineral rights may be uniquely challenging for developers of large, utility-scale CSP projects. Projects that require large areas of land or several different lots may share those lands with existing mineral rights holders, such as oil and gas companies, railroads or their successors, or other persons or entities, including governmental bodies.

Certain states are more abundant in mineral resources than others and have different resources, depending on the terrain. "Minerals" can include:

- Fossil fuels such as oil, natural gas, and coal.
- Metals and metal-bearing ores such as gold, copper, and iron.
- Nonmetallic minerals and mineable rock products such as limestone, gypsum, building stones, and salt.
- Sand, gravel, peat, marl, etc.

Broadly speaking, the term "mineral rights" refers to the privilege of earning income from the sale of oil, gas, and other valuable resources found under the surface of the land. Note that mineral rights are rights to whatever is below the surface of the land, and do not indicate that the mineral owner also owns the surface of the land. Mineral rights do mean, however, that the mineral owner has the right to use as much of the surface as is reasonably necessary to extract the minerals ("surface rights"). As part of conducting the property due diligence, the project developer will want to check the title documents because mineral rights are a recordable property right.

Fortunately for the project developer, mineral owners are not usually in the financial position to extract the minerals. Exploration and extraction are expensive, and mineral owners may be very happy to relinquish their surface rights under a profitable arrangement. One mutually advantageous option is to enter into a long-term lease under which the mineral owner waives surface rights in exchange for a royalty benefit stream based on project profitability or other measures. Another payment option is a "royalty in kind," a percentage of the energy produced by the CSP. Before the paperwork is finalized, confirm that all the mineral owners have signed off on the arrangement to avoid unpleasant surprises.

III. Other Potential Property and Land Issues.

A. Water Rights for Concentrated Solar Power Projects. Water requirements for CSP projects require careful consideration and planning. When a project is located in a semidesert or desert environment, the solar radiation is plentiful, but water may be scarce or severely limited. Savvy project developers should give early and careful consideration to potential sources of water. A few of the critical questions to ask include:

- Is there a source of water currently in place on the property—a surface source (such as a river or canal), a municipal source, or a groundwater well?
- If there is no surface source, is water available from an aquifer or from a local source?
- What water laws and restrictions will affect the ability to obtain water for the project?
- If a well or surface diversion is required to bring water to the project, what water rights or licenses are needed and how much time is needed to obtain those rights?

Getting a clear understanding of a project's water needs, the availability of water at a project site, and the time and cost involved in obtaining water will go a long way toward establishing a project's construction and operation timeline, budget, efficiency, and output, and, ultimately, its feasibility.

B. Access to Sunlight: State and Local Government Laws. A total of approximately 34 states have presently passed laws or taken measures to promote the installation and use of a solar energy system. The states have two primary mechanisms for ensuring that the "green" property owner can access sunlight to operate the system:

- Allowing neighboring property owners to voluntarily enter into solar easement contracts that, like any other property right, must be documented in writing and recorded in accordance with local requirements. Be sure to check for state-specific recordation procedures.

- Prohibiting the imposition of an outright embargo on the placement of a system in a community, or of unreasonable restrictions on the placement of devices such that their installation, operation, or functionality is adversely impacted.

Any contract creating a property right must contain certain universal legal elements no matter where the property is situated. Most states require the contract to describe the dimensions of the easement, the estimated amount of sunlight directed to the system, any shading provided by vegetation and other plantings, the corresponding reduction in access to sunlight, and any proposed compensation to the grantor of the easement. Any terms or conditions for revising or terminating the easement should be included as well. The contracting parties may include their own remedies for breach of the easement, or default to state law, allowing a court to order any interference with the system to stop and awarding damages for the capital cost of the system, any additional energy charges caused by the breach, and attorneys' fees and costs.

However, to be enforceable, a contract creating a solar easement must also contain any state-specific requirements. A state's focus may be affected by weather, terrain, or the character of the area. Some states and/or local governing bodies can be height- or design-sensitive (California, Colorado) or locale-sensitive (Hawaii), or may focus on visibility and placement (North Carolina), orientation (Wisconsin), zoning (Rhode Island), or setback issues (Oregon).

Some states pay special attention to subdivisions. Subdivision developers should be aware that homeowners associations' rules may include covenants that prohibit the installation of solar energy systems or unreasonably restrict their placement to a location that impairs function or increases cost. Other states will not provide state grant funding for solar energy projects to a public entity that has restricted the installation of solar devices. In California, public entities are required to certify that they are not engaging in such behavior, and anyone working on such a project may wish to review the certification as part of due diligence.

Kathleen J. Doll

Law Practice
Kathleen Doll is a member of the firm's Renewable Energy initiative of the Energy and Telecommunications practice group. Her practice focuses on the development, acquisition, and sale of renewable energy projects, with a focus on real estate, project development agreements and related transactions.

Prior Legal Experience
Associate, Rycewicz & Chenoweth, LLP, Portland Oregon (2003-04).

Professional Activities
Owen M. Panner American Inn of Court; Oregon State Bar Environmental Law section; Multnomah Bar Association; Multnomah County Legal Aid Night Clinic; Stoel Rives Immigration Law Pro Bono Practice Team; Pro bono attorney, Mississippi State Bar/FEMA, Hurricane Katrina Disaster Legal Assistance (2005)

Community Activities
Mentor, Powerhouse Mentoring Program for adolescents in foster care; mentor, Law Student Mentor Program of Lewis & Clark Law School.

Publications
Coauthor, The Law of Wind, Wind Energy Lease Agreements; coauthor, The Law of Biofuels, Siting and Permitting Projects; coauthor, The Law of Ocean and Tidal Energy, Siting and Permitting Ocean and Tidal Power Projects; coauthor, ESA Incidental Take Authorizations, Oregon Insider Issue #360 (January 2005).

Awards
Member, Cornelius Honor Society (honorary organization of Lewis & Clark Law School); recipient, Natural Resource and Environmental Law Scholarship, Lewis & Clark Law School; Scholars List, Lewis & Clark Law School.

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State bar of Oregon

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J.D. with honors, University of Washington, 2003

LLB with honors, London School of Economics and Political Science, London, England, 1976

Admissions
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U.S. District Court for the Central District of California

Supreme Court of England & Wales

Foreign Language
French

Law Practice
Janet Jacobs is an associate in the Corporate practice group. She has experience in the areas of corporate governance, acquisition of businesses, international commercial contracts and international regulatory compliance. Her clients include private corporations with extensive overseas business relationships, and suppliers of consumer products. Janet also has litigation experience with import/export issues, product liability, real estate and construction matters.

Prior Legal Experience
Associate, Alschuler, Grossman & Pines, Century City, CA; associate, Valensi, Rose & Magaram, Century City, CA; associate, Forsyte Kerman, London, England.

Representative Experience
Managed due diligence for Seattle-based client in its acquisition of certain assets of Ignition Mortgage Technology Solutions, Inc., a wholly-owned subsidiary of Freddie Mac.

Managed due diligence and ancillary documents for United Kingdom-based client in its cross-border, multi-state acquisition of assets of MCK entities.

Managed due diligence and ancillary documents for Seattle-based software client in its sale of assets.

Manage negotiations and referral agreements between major international financial institutions and Seattle-based client with international insurance brokerage business.

Manage international regulatory compliance for Seattle-based client with international insurance brokerage business.

Professional Activities
Member, Washington State Bar Association, Business Law and International Practice Sections; member, Law Society of England and Wales.

Community Activities
Member, Virginia Mason Foundation Committee; advisor, Board of Directors, Team Survivor Northwest.

Awards
Smith-Doheny Legal Ethics Writing Award (Notre Dame Law School).

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Howard E. Susman

Law Practice

Howard E. Susman is a member of the firm's renewable energy practice group, where he serves developers and operators of wind, solar, and geothermal projects. Since the wind industry's inception in the early 1980s, Howard has represented wind clients in every phase of project development, operation, and transfer. With a national reputation as one of the leading lawyers involved in that industry, Howard has represented clients in both transactional and litigation matters. His experience extends to all elements of renewable energy including real estate and environmental matters, equipment performance and project operations, consulting and business relationship matters, insurance coverage, and complex business litigation.

Prior Legal Experience

Partner, Duckor Spradling Metzger & Wynne (2001-2005); Hillyer & Irwin (1982-2000), managing partner (1996 – 1999); attorney, Pacific Legal Foundation (1979-1981).

Representative Transactions

Joint venture agreements for development of 60 MW wind energy projects and leases for project sites

Lease of 6000-acre site for wind energy project to be owned and operated by municipal utility

Spin-off of foreign assets of U.S. wind energy developer

Sale of wholesale domestic insurance brokerage to international insurance intermediary

Agreements for sale, installation, and licensing of supervision, control, and data acquisition systems for energy projects

Representative Litigation Matters

Defense of wind project developers' re-powering permits against challenge on grounds of inadequate analysis of downwind effects in environmental impact report

Representation of limited partner against general partner and affiliated entities on grounds of breach of various fiduciary duties in management of joint venture to develop and operate wind facilities

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Education

University of California at Santa Barbara, B.A. Environmental Studies, 1975

University of San Diego, J.D., 1979

Admissions

State Bar of California

U.S. District Courts, California

U.S. Courts of Appeals, 9th Circuit and Federal Circuit

Howard E. Susman

Representative Litigation Matters (cont.)

Defense of action for breach of cogeneration facilities agreement (dispute re pricing formula and equipment performance)

Defense of actions for infringement of patents for variable speed wind turbine technology in U.S. International Trade Commission and District Court

Defense of action by lessor to enforce rent adjustment clause tied to avoided cost pricing (projected vs. actual following expiration of fixed prices under Power Purchase Agreements)

Representation of wind project owners in actions to enforce warranty and property insurance following wind turbine manufacturers' inability to repair multiple and serial defects

Defense of actions by utility for breaches of Power Purchase Agreements based on derating of wind facilities' generating capacities

Professional Activities

Past President and Director, Association of Business Trial Lawyers of San Diego; Member, California Wind Energy Association; Member, San Diego County Bar Association; Certified Mediator.

Community Activities

Member, UCSB Crew Alumni Association; Leader, Regional Father/Son Group Program, 2005, Encinitas YMCA.

Presentations and Publications

"The Role of Key Project Contracts," Infocast Renewable Energy Project Finance Seminar, San Diego, 2006, "Working Effectively and Efficiently With Your Lawyers," Windpower 2005, Denver; Application of the Anti-SLAPP Statute to Malicious Prosecution, ABTL Reports, 2002; "Mediating Business Cases", Association of Business Trial Lawyers Annual Seminar, 2000; "Site Acquisition and Successful Landowner Relationships", Windpower '95, Wash., D.C.; "Litigation Consulting and Expert Testimony", UCSD Extension, 1992, Institute of Management Consultants, 1997.

Chapter Two
LEX HELIUS: THE LAW OF SOLAR ENERGY
—Power Purchase Agreements: Distributed Generation Projects—

Patrick G. Boylston

I. Introduction. The rapid growth of the renewable energy market is reflected in the total lack of common naming conventions. "Small scale wind" is applied to a very wide range of output capacities. Similarly, "distributed generation" is applied to a very wide range of facilities using different technologies and varying in size. The one common element of all distributed generation projects is that they are assumed to be located "on-site." This means that they are designed to make minimal direct use of the existing transmission grid. In addition, many of the current distributed generation technologies are intermittent in nature. That means they can only produce electricity under certain circumstances: in the case of wind, when the wind is blowing; in the case of solar, when the sun is shining (or at least up). Consequently, access to and interconnection with the grid will usually be very important to the users of electricity from distributed generation projects. There must be some way to access electricity when the distributed generation project is not or cannot be generating. The intermittent nature of most distributed generation facilities has a range of impacts, regardless of the size of the distributed generation facility under consideration. Many of these, such as net metering, are discussed in other chapters.

For distributed generation solar photovoltaic ("PV") installations, the "on-site" nature of the project is typically a far larger complicating factor than the intermittent nature of its output. Unlike larger utility-scale projects, distributed generation solar PV may be located in either urban or rural areas, on rooftops or on the ground, on larger structures or smaller structures, with clear solar access or in congested areas. In addition, the site "host" may or may not be the power purchaser. Consequently there is a significant potential for strongly conflicting interests between the passive host with no interest in the project and the power purchaser who wants the project output and what each is willing to accept as reasonable risk allocations with the project developer.

Each of these distributed generation aspects must be addressed somewhere in the project documentation. If the power purchaser and the site host are the same, it makes little difference whether the relevant provisions are put in the site lease or the power purchase agreement (the "PPA"). However, the site can always be sold or the site host can lease or sell the premises, so there is no single answer that will work in all situations. To reflect the particular nature of distributed generation facilities and the increasing nationwide interest in larger utility-scale PV or solar thermal projects, we have split our discussion of PPAs into two parts. The first part discusses distributed generation solar PV PPAs. The second part discusses solar PPAs in the context of larger utility-scale projects. To the extent that there are issues in common, the first part will refer the reader to those sections of Chapter Three, Power Purchase Agreements: Utility-Scale Projects, for discussion of those issues.

A. The Parties.

1. **The Project Owner/Seller.** The ownership of a distributed generation solar PV installation is a tax-advantaged investment. Indeed, due to the relatively small electric output of these installations, the tax benefits are a far more important element of creating a viable project than are projected revenues from the sale of electric energy. Consequently, the project owner/seller will be relatively less interested in structuring the PPA to maximize revenues from electricity sales than it will be in protecting and enhancing the available tax benefits. The distinction between the federal solar Energy Credit, which is based on the qualifying cost of the installation and may be taken immediately, and the federal production tax credit (available, for example, for wind), which depends on actual generation of electricity and must be taken over time, is important in the context of distributed generation solar PV projects. Another distinction between the federal solar Energy Credit and the federal production tax credit is that anyone who is contemplated claiming the credit must be an "owner" at the time the installation is placed in service for federal tax purposes. This requirement is also usually reflected in the distributed generation solar PPA.

Due to these tax-driven considerations, the project owner/seller in a distributed general solar PV project will usually be a limited partnership or limited liability company. The entity will expect to be able to pass through to its partners or members the tax benefits, revenues from power sales, and revenues from the sale of Renewable Energy Credits that represent the environmental benefits and attributes of the noncarbon-based electricity generation ("RECs"). Depending on the particular forms of subsidy (such as state tax credits, state cash subsidy payments, or solar carve-outs in the locally enacted renewable portfolio standards designating the amount of generation local utilities must derive from renewable sources by certain benchmarks), the project owner may have more or less interest in actually owning the facility after the tax credit recapture and direct subsidy period has ended (though there are other tax considerations relating to the "profit motive" test that may require the project owner/seller to need a longer-term ownership of the installation). In other words, the project owner/seller typically has little interest in actually operating or structuring itself as a utility. Solar PV lends itself well to this lack of interest in being a "real" power generator since solar PV is generally considered to have an extremely low level of required maintenance and an extremely high level of reliability. Consequently, the project owner/seller wants to minimize risks to its expected stream of tax benefits, power sales revenues, and REC sales, particularly those that the project owner/seller considers to be within the control of the site host or power purchaser to prevent or avoid.

2. **The Buyer.** The power purchaser typically will be someone who is interested in supplementing their power off-take from the grid at a specific location. This can be a single manufacturing facility, an office building, an automobile dealership, a warehouse, a school, a hospital, or a public facilities maintenance building. As the market is realizing, there is an enormous opportunity to place safe and passive solar PV installations in a wide range of locations. The physical constraining factors are the relatively low output of current solar panels and the resulting large amount of space required to install enough panels to generate a significant output. In addition, there are frequently state regulatory hurdles that make it difficult to install as many panels as a site host might have room for because of limitations on the number of possible power purchasers (customers) that can be served without becoming subject to state public utility commission regulation. See Chapter Five, Regulatory and Transmission–Related Issues. For these reasons, the power purchaser from a

distributed generation solar PV facility will usually be either someone whose power needs fit extremely well with the daytime generation curve of solar PV, or someone who is looking for a supplement (or hedge) against their exposure to uncertain future market rates for electricity charged by their local serving utility. In essence, this power purchaser just wants to receive the power with the minimum amount of additional risk and financial obligation. They want green power but have only a limited interest in paying significantly more for that power than it would cost them to just "flip the switch" and take it from their local utility.

3. **The Site Host.** If the site host and the power purchaser are not the same, the site host can become a silent partner (or at least an ever present consideration) in the negotiation of the PPA. Although not as true for a ground-mount installation, a rooftop installation is generally in place for a long time on a structure that was probably not specifically designed to accommodate a solar PV installation. This can raise a number of questions regarding the timing and need for routine rooftop repair, maintenance, and replacement (both the costs of having to move the installation to allow repair or replacement and the lost revenues from power sales while the repair or replacement is going on); the possible need for structural improvements to support the solar PV array; the susceptibility of the solar PV array to high wind conditions and other climate factors where it is located; and the problems of changing ownership or occupancy of the structure during the term of the PPA. The project owner must recognize that these situations pose objective risks that may disrupt the production of electricity from the installation temporarily or permanently.

Because the typical owner of a distributed generation solar PV installation does not view itself as actually being in the business of power generation, the project owner will tend not to view these as ordinary course risks of doing business. Consequently, the project owner will want to allocate these risks among the parties in the best position to protect against their occurrence, or in the "fairest" position to bear the economic costs caused by their occurrence. Similarly, a site host who is not also the power purchaser will tend to not want to bear any of these costs that may be outside its normal costs and risks of doing business, such as providing for roof repair, maintenance, and replacement. On the other hand, a power purchaser who does not own the building or structure it is occupying is likely to view these as risks that it is not normally asked to assume as a "mere tenant." The fact remains that the project owner is making a significant financial investment that will depend on all of the various economic returns from the project, tax benefits, power sales revenues, and REC sales or other subsidies to make a reasonable return on its investment. No solar PV project is so economically "rich" that allocating these risks can be overlooked. To make sense of how the power sales aspect of a PPA interacts with these "other" concerns, it is first necessary to discuss how a typical PPA deals with the actual sale of output from the solar PV installation.

B. The Power Sales Aspect of the PPA.

1. **Standard "Take and Pay" Terms.** Most current distributed generation solar PV PPAs simply provide that the buyer will buy all of the electricity generated by the installation at the price specified in the PPA and the electricity will be delivered at the point of interconnection with the buyer's (or site host's) electric system ("behind the meter" delivery). In other words, the obligation to pay is based on the actual receipt of output at the specified point of delivery, and payment is determined by reference to the amount of output delivered. By contrast, a "take or pay" contract specifies a certain amount of money the purchaser is obligated to pay each year regardless of whether the installation actually produces output or not. Although such take or pay

contracts are a common feature of the financing of large coal or natural gas fueled generation facilities, the solar PV market has taken a different approach, reflecting the distributed generation nature of the assets and the fact that these installations, at least on the distributed generation scale, would probably not be acceptable to power purchasers who did not have some assurances regarding receiving value (output) for their money.

2. **Pricing the Take and Pay PPA.** There are many variations on how the electricity to be delivered is priced under a solar PV PPA. We have seen it priced at a discount to the current market rate with a moderate annual escalator. We have also seen it priced at the current market rate with a more substantial annual escalator, as well as being priced at a fixed rate based on current market rates or at a fixed rate that is initially over the current market rate with the expectation that the rate will cross under the then market rate at some forecast point during the term of the PPA. These examples certainly do not exhaust the potential options. One common element is a pricing constraint that reflects the current and forecast market price of electricity from the local serving utility over a time period equal to that of the PPA. In most situations, even though the power purchaser is motivated to obtain green power, there seems to be a real limit on how much over market the purchaser is willing to pay for this benefit.

3. **Pricing Based on Output Levels.** There is debate about whether guaranteed output warranties should be expected to be a standard warranty offered by a solar panel manufacturer. From many power purchasers' points of view, they certainly should be offered because the power purchaser believes that it is paying a premium for obtaining green power, and the utility of that decision goes down dramatically if the power purchaser is not receiving the amount of the benefit (output) it thought it would when it decided to buy green power. Most project owners/sellers would probably agree with this point of view. However, giving an actual annual output warranty can expose the panel manufacturer to a substantial contingent liability that it is largely not in a position to mitigate. Will panel manufacturers continue to offer these actual output warranties? Only time will tell. However, this actual annual output concern can still influence the pricing structure of the PPA even in the absence of any manufacturer's warranty.

Some power purchasers will insist on a "guaranteed" level of annual deliveries from the project owner, even if the project owner has no manufacturer warranty backing its obligation. Typically these provisions will require a reduction in the price of power or a "penalty" payment from the project owner if actual deliveries drop below a specified percentage of the designated output of the installation during any year. The project owner takes a real risk in agreeing to such a provision. We understand from anecdotal information that weather patterns are subject to significant year-to-year variations, though over a longer three- or four-year period, they will average out to a "norm." Consequently, a project owner may pay penalties for a particularly bad year that cannot be made up from excess deliveries in another year, or cannot be recouped when the installation has produced at the required level over an averaged period of several years. How the project owner will mitigate this risk is usually not clear on the face of the PPA, but is definitely in the project owner's mind when the levels of output at which penalties will become payable is being negotiated. The fact that power purchasers want these types of assurances also influences how the panel manufacturer markets its products.

The typical PPA contains a provision stating that power generation will decrease annually by a fixed percentage, usually 1 or 2 percent, though again there is anecdotal evidence that many manufacturers actually expect panel output degradation to be substantially below this level. Similarly, and again from anecdotal information, many panel manufacturers understate the anticipated output from their panels. After all, if you might be held liable for the output of your product, it is more in your interest to understate expected performance than overstate it for a potential marketing advantage. The project owner will take this possible understatement of actual output capability and overstatement of degradation into account in specifying the size of the annual delivery deficiency that will trigger either a lower price or the payment of penalties. Viewed as a potentially necessary element of comfort to the power purchaser, the project owner should attempt to make certain that the threshold is set low enough that it is never triggered.

4. **Pricing Based on Net Metering Expectations.** Many power purchasers enter into solar PV PPAs with the expectation that any output that they do not use can be sold to the local utility. Net metering is one way in which the power purchaser expects that it can gain a financial benefit from any excess electricity delivered by the solar PV installation. Another is the power purchaser's possible expectation that the power can be sold to the local utility by delivering it to the power purchaser's point of interconnection with the local utility's transmission grid ("at the meter" delivery).

The PPA itself will usually not have any provisions dealing with these situations because the typical solar PV installation is delivering behind the meter for the immediate use of the power purchaser without the requirement of any use of the local utility's grid for transmission. However, if the power purchaser has acted on these expectations without investigation in accepting the pricing structure of the PPA, the power purchaser may be in for a surprise. In many situations, a net-metering situation does not produce any actual revenue to the power purchaser (usually referred to as "monetizing" the excess electricity). Although excess electricity may be delivered to the local utility at the meter (resulting in the meter "running backwards"), there may be no obligation under federal or local law for the local utility to pay the power purchaser for those deliveries. For example, in Oregon, at the end of each year, the amount of credit built up by the power purchaser for such deliveries is applied by the local utility to the electricity bills of low-income customers. The delivering power purchaser does not receive any payment. In other states, deliveries to the local utility may trigger a regulatory requirement, though several states also seem to have provisions providing an exception for deliveries to local utilities to avoid this problem. In other words, both the project owner and the power purchaser should carefully investigate the local rules that will apply to any excess electricity delivered to the local utility's grid. There may be surprises for the unprepared.

II. Standard Provisions of a PPA.

A. **Term of the PPA.** The current standard appears to be that the PPA will have a length ("term") of 20 years, though 15 years is also common. To some extent, the term is dictated by the project owner's desire to receive, or need to receive, a certain rate of return from its investment. It is increasingly common, however, to see PPAs with terms significantly shorter than 15 or 20 years. This may arise, in part, from a desire by the power purchaser to "reprice" the PPA at certain intervals as a hedge against having agreed to an annual escalator that produces a price for electricity substantially above the future market price. This may also arise, in part, from a desire on the part of the project owner to be able to forecast future PPA prices at levels above what would be required under the initial contract. However, shorter term PPAs rarely occur without the intervening effect of specific purchaser options provisions, which are discussed below. It is standard in solar PV PPAs that the project

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owner is responsible for paying the costs of removing the installation from the site upon the natural termination of the PPA. However, if termination occurs early due to an event of default caused by the power purchaser or a termination declared by the site host, this cost typically shifts to the party triggering the early termination.

B. Installation, Testing, and Start-up. Most PPAs contain an obligation on the part of the project owner to cause the project to be installed, set out the conditions relating to preoperation testing, and define when the project will be considered "placed in service" (important for tax considerations and not requiring full actual operation) or in "commercial operation" (which relates to when the power sales provisions of the PPA become effective and usually requires that the project produce and deliver electricity at the designated standards set forth in the PPA). The project owner will usually satisfy its obligation to construct and install the project by entering into an installation agreement with an experienced solar installer. The installer will then undertake the obligations of testing the project, obtaining certification that the project has reached commercial operation, and completing the final punch-list items necessary to complete the installation contract. Preoperation testing for a solar PV installation is usually quite simple: hook the system up for a period of at least four hours and meter the output to see if it is producing within design parameters. If it does, it has passed its required precommercial operation testing and will be considered placed in service. For more on installation agreements, see Chapter Four, Solar Energy System Design, Engineering, Construction, and Installation Agreements.

C. Project Operation and Maintenance ("O&M"). The solar PV PPA typically will also provide that it is the project owner's responsibility to maintain the installation. Several standards are usually specified, such as accordance with prudent utility practice, prudent solar industry practice, or best practices, but they all mean essentially the same thing. The installation will be maintained so that it does not pose a danger to individuals or the structure on which it is located and will produce electricity at the highest level possible. The project owner will also fulfill this obligation by subcontracting the O&M contract. Many installation contractors will also want to be awarded the O&M contract and will make a longer term for their equipment and installation warranty (two or three years, increasing to five or 10 years), depending on their handling of the O&M.

D. Project Purchase Options. An option for the power purchaser or site host to purchase the solar PV installation at some defined point during the term of the PPA is a common feature of solar PV PPAs. As with the pricing structure, the times at which this purchase option may be exercised varies widely.

1. Purchase Option Points During the PPA Term. Project owners that view themselves as being in the power generation business may want to delay this point as long as possible, typically to the end of the initial term of the PPA. A project owner who views itself as being in the power generation business will typically want a 20-year PPA term, though some shorter period may be negotiable. Also common is a purchase option exercisable at the 10th or 15th year or on the natural expiration of the PPA. Some power purchasers that are also site hosts want the purchase option to be exercisable at any time. Granting such a purchase option presents significant issues for the project owner/seller, which are discussed below.

2. Pricing the Purchase Option. A project owner considering granting a purchase option is faced with a combination of tax considerations and economic business considerations. These considerations will influence the points during the term of the PPA at which a project owner will be willing to grant a purchase option exercise right. For example, the federal Energy Credit has a five-year recapture; any exercise of a purchase option during the first five years of the PPA will trigger recapture of a percentage of the federal Energy Credit received by the project owner. An exercise of a purchase option before the owner has realized its expected return will not be acceptable to the owner. This issue is frequently dealt with by providing a termination fee in the PPA, which is payable upon exercise of the purchase option before the full term of the PPA. The termination fee can be structured to take into account certain items that the project owner believes should be realized under the PPA. In addition to being payable upon exercise of an early purchase option, the termination fee also has application to other situations, such as a breach and event of default caused by the power purchaser or site host. In addition, we have seen PPAs that provide for a defined purchase price payable upon exercise of the purchase option. This purchase price is separate from the termination fee. As the term of the PPA runs down and the termination fee gets smaller, the project owner is still assured of receiving at least the purchase price upon exercise of the purchase option. The IRS standard is that any purchase option must be for not less than the fair market value of the project at the time the purchase option is exercised.

E. Off Ramps Before Construction, Events of Default, and Other Common Provisions. See Chapter Three, Power Purchase Agreements: Utility-Scale Projects, for a discussion of standard event of default provisions that are generally applicable to both distributed generation solar PV PPAs and utility-scale PPAs, other than those dealing with the creditworthiness of guaranties and other financial accommodations, which typically are not found in distributed generation solar PV project documentation.

III. Onsite Issues in a Distributed Generation Solar PV PPA. There are several issues arising from the on-site location of distributed generation installations that are relatively unique to these types of electric generation projects. They will be encountered in any distributed generation facility regardless of technology, but the large increase in the installation of distributed generation solar PV facilities makes them an excellent template for discussing these issues.

A. Structural Integrity. Installing a solar PV installation on the rooftop of an existing structure will put a significant weight load onto a structure that probably was not designed for that weight. Placing a solar PV installation on a structure that cannot easily bear the weight is a clear danger to health and safety, and poses a potential threat of damage to the structure itself. A careful survey of the weight-bearing load capacity of any building on which a solar PV installation will be placed should be done before going very far into the negotiation process. Structural reinforcement may be required, and the costs of those improvements may prevent the installation from being economically viable. The only option other than making structural improvements may be downsizing the proposed installation so it weighs less. The site host, power purchaser, and project owner each have a direct and clear interest in being certain the structure on which the installation will be placed can bear the load for at least the full term of the PPA. In addition, upgrades to the structure's electric system may be necessary for it to handle the delivery of output from the solar PV installation.

B. Repairs and Replacement. Almost every roof will require maintenance and repairs at some point or points during the term of the PPA. In addition, most roof coatings are designed with a known useful life. Exceeding the useful life of the existing roof may require the solar installation to be moved or removed from the rooftop to allow repair or replacement of the existing roof. There is a direct economic cost to either disconnecting the installation and moving it out of the way on the rooftop or disconnecting the installation and moving it off the rooftop while repair or replacement is conducted. That economic cost is the loss of power sales during the period the installation is out of service, as well as the loss of any REC sales or other subsidies that depend on the installation being in production. Most project owners will grant the power purchaser or site host some agreed period of time each year in which there will be no penalties incurred to accommodate ordinary repairs and maintenance. Usually this will not exceed seven calendar days total during each year. If the installation downtime will exceed this agreed-on period, many PPAs will require that the power purchaser start reimbursing the project owner for lost power sales, lost REC sales, and other lost economic benefits. If the power purchaser is not the site host, this presents a clear need to coordinate the PPA and the site lease, license, or easement to handle this risk.

C. **Sale of the Structure or a Change of Tenant.** Distributed generation installations also present the unique problem that ownership of the structure on which the installation is located may change during the term of the PPA, or the tenant that was previously the power purchaser may move out and a new tenant that is not interested in assuming the PPA may move in. There is no single, clear, simple solution to this problem. Typically, the site lease, license, or easement will require that any purchaser of the structure assume the site lease, license, or easement. However, if the existing owner is motivated enough, it may not be willing to impose this requirement on an unwilling buyer. Similarly, the site host may want to require a new tenant to assume the PPA, but if the new tenant is unwilling and has sufficient leverage with the site host, that may not happen. Consequently, even if the project owner believes it is adequately protected from these situations under the project documents, the project owner is faced with a difficult decision. There is a substantial cost attached to the project owner enforcing its legal rights, as well as immediate lost revenues of various types if the new owner or tenant simply will not accept the delivery of electricity from the solar PV installation. Many PPAs appear to ignore this risk as being too complicated to deal with when everyone wants green power at the time the installation is being negotiated. Other PPAs attempt to anticipate this situation by providing the parties a middle ground. If the installation has to be removed, whoever is liable for damages—the site host or the power purchaser—can limit and mitigate its damages by helping the project owner find a new site for the installation. To further motivate the site host or power purchaser to assist the project owner, the PPA also frequently provides that successful relocation will result in a decrease in damages for being forced to move the installation. Instead of damages being the cost of removal and all lost revenues for the remaining term of the PPA, they are limited to the cost of removal and relocation together with the differential between any lower price the project owner has to accept for power sales and the power sales price under the PPA.

D. **Ground-mount On-Site Issues.** A ground-mount installation obviously presents a smaller range of issues than a rooftop installation. Typically a ground-mount installation is located on a piece of land that was not being used for any significant purpose before the installation. In addition, ground-mount installations do not require a substantial disturbance to the subsurface area of the site. For this reason, it is often proposed that placing solar PV installations on areas that are otherwise considered unusable, such as covered garbage dumps, sanitary landfills, or hazardous substance sites, would be an excellent way to reclaim such sites. Anyone considering this option should clearly understand that the project owner will have absolutely no interest in potentially becoming involved with environmental lawsuits or claims relating to the site. A solar PV installation usually does not involve any substances legally defined as hazardous either during the construction and installation phases or during normal operation, and normal installation does not disturb the soil to the extent it raises a risk of exacerbating any existing contaminated condition. Consequently, the project owner will rightly refuse to take any risk regarding existing contaminants and contamination at the site. The site host will need to understand that the project owner will be seeking full protection through full indemnification for existing conditions and any disbursement of existing conditions to surrounding properties from a creditworthy party, a strong hold-harmless covenant, or some other means of assuring that the project owner will not (or cannot) be pulled into remediation efforts or lawsuits relating to the contaminated conditions.

IV. Conclusion. The project owner must carefully consider how to integrate the on-site issues presented by a distributed generation solar PV installation with the basic purpose of the PPA, which is to cover the project owner's agreements with the power purchaser regarding the installation, start-up, maintenance, and sale of output from the installation. Any situation in which the PPA will be with a party other than the site host will raise the question of whether these on-site-specific provisions should be in the site lease, the PPA, or a combination of the two documents, depending on what the project owner is able to negotiate with the site host and the power purchaser.

Simply ignoring these issues is an option for the project owner, but one that needs to be taken knowingly. Failing to address these issues or being unable to satisfactorily address them during negotiations does represent a significant assumption of risk by the project owner.

As to the basic core terms of the PPA, the discussion above indicates that there are many different approaches to each provision being used in the market. At this point, there is no single set of deal points that are generally accepted as the industry standard. There are many different ways the market may react to the relatively large up-front costs and time involved in putting together a solar PV deal. One response will be an increasing trend among developers to offer a one-stop shopping alternative that is intended to allow power purchasers to just "flip the switch" as they do when acquiring service from their local utility. This approach is likely to involve the developer/project owner having a prepared set of documents that it will present as part of a total package. This approach may work when the site host and the power purchaser are the same entity and there are no special on-site issues or considerations. However, even if the use of fully prepackaged deals and documents increases, there will still be many different options available to address specific issues encountered by the project owner, power purchaser, or site host who wants something more responsive to its own situation. As in every other area, no matter how much the participants want to be able to use a cookie-cutter approach, very few cookie-cutter deals are ever done successfully.

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Bond Counsel Practice

Patrick Boylston is a business lawyer, concentrating on issues relating to renewable energy development, interaction with municipal entities and the financing of solar photovoltaic installations, corporate debt and public infrastructure. Patrick's varied experience is particularly useful in assisting renewable energy projects which will involve some level of public participation, either through power purchases, public financing or siting on public facilities.

Patrick represents independent power producers and power marketers on resolving business and credit issues in power sales agreements. Working with public and private power purchasers, developers, site hosts and financing sources, Patrick has been involved in solar photovoltaic projects in service or under development in California, Colorado, Oregon, Washington and Hawaii. He also provides technical advice on business, financing and development issues to all Stoel Rives' offices pursuing solar project engagements.

Primarily a corporate, partnership and individual tax lawyer Patrick has become more deeply involved in a variety of tax related and motivated financing transactions. These include traditional corporate finance and business law, working largely with lenders to merger and acquisition transactions and export oriented timber products companies, municipal bonds and finance. Patrick's experience working with local governments has been invaluable to energy sector clients entering into power purchase and development contracts with local government and municipal utilities.

Professional Activities

Member, National Association of Bond Lawyers; past member, American Bar Association Section of Taxation; member, Oregon State Bar Local Government and Taxation Sections; associate member, Oregon Municipal Finance Officers Association; Oregon School Business Officers Association.

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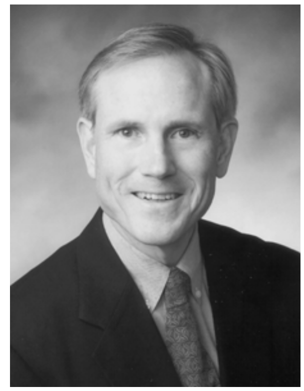
A frequent presenter at seminars and conferences on topics such as: negotiating agreements for solar photovoltaic projects; financing biomass projects; financing small scale wind development and tax based financing for Indian tribes. Coauthor; Tax-Exempt Financing chapter, Health Law CLE Manual (published in 1992 by the Oregon State Bar and updated in 1998); coauthor, “Municipal Finance Notes, Traps for the Unwary: Disappearing Statutes and Disappearing Contract Terms”, Vol. 8, No. 1, Government Perspectives, (Oregon State Bar, 1989).



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Chapter Three
LEX HELIUS: THE LAW OF SOLAR ENERGY
—Power Purchase Agreements: Utility Scale Projects—

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I. The Basics. As mentioned in Chapter Two, Power Purchase Agreements: Distributed Generation Projects, there is a substantial amount of confusion and disagreement about what constitutes a "utility-scale" renewable project. To some extent, this depends on the specific technology and the sizing of projects using that technology. For example, a 100-MW wind installation is generally accepted as being utility-scale, but a 20-MW facility may be called utility-scale or community wind. For solar installations, the size range is more compact because of both the higher cost-per-watt of most forms of solar generation and the current lack of truly large-scale solar installations in the United States. Though most proposed solar facilities on the scale of 50- to 100-MW would use concentrated solar or solar thermal technologies, there are increasing numbers of proposals to develop solar PV facilities on scales that have not been seen before. Rather than try to resolve this confusion in terminology, we will simply use the term "utility-scale" to mean any installation that is intended to sell its output to a utility customer rather than a direct end user of such output.

A. The Parties.

1. **The Seller.** The seller will usually be the developer of a solar facility that will generate energy ("output") and environmental attributes ("RECs"). In a utility-scale installation, there is a high likelihood that the developer will sell a substantial interest in the installation to an investor or utility before the installation being placed in service so that the developer can recoup its development costs and tax benefits, and RECs can be transferred to an entity that is in a better financial position to utilize those benefits, such as a utility that can use the RECs to meet applicable mandatory renewable portfolio standards, which require the utility to obtain some specified percentage of its generation from renewable resources by certain benchmark dates ("RPS").

2. **The Buyer.** The buyer will typically be a utility that will purchase the solar power project's output to serve its load. The utility will likely be motivated by an RPS or other regulatory policy that encourages the development of solar power and other forms of renewable energy. In a state that permits direct access, it is possible that one or more of the buyers could be a retail purchaser, such as a manufacturing facility that wishes to hold itself out as a green company, even though the solar facility is not located on the customer's premises.

3. **Credit Support Provider.** The power purchase agreement (the "PPA") will require the buyer to buy the output that the seller delivers. It may also require the seller to pay the buyer if the project is not built on schedule or fails to achieve certain performance standards. Each party will be concerned about the other's ability to satisfy these payment obligations. If one party is not creditworthy, the other may require it to provide a guaranty or post a letter of credit or other security to ensure that amounts due under the PPA will be paid.

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B. **Regulatory Concerns.** The regulatory issues arising from a utility-scale solar installation are complex and detailed. Rather than attempt to summarize such issues in this general background article, we will simply note that any developer or owner interested in a utility-scale solar project should make a point of contacting experienced utility regulatory counsel early in the process. Regulatory proceedings frequently take more time than the parties anticipate, and development schedules need to take these time and cost factors into account.

II. The Term.

A. **Project Financing.** If the solar power facility is financed with limited recourse financing, the term of the PPA should be sufficient to amortize the project debt. Capital costs per megawatt hour ("MWh") of energy produced may be relatively high for solar power facilities because they produce energy only when there is sunlight. To produce the revenues needed to amortize the project debt, the term of the PPA for large projects usually must be in the range of 20 years.

If the term of the PPA is 20 years, lenders will generally be willing to amortize the debt over a 15- to 17-year period. In utility-scale project financings, the debt amortization period generally needs to be shorter than the PPA term to allow work-out time in case the project encounters financial difficulties in later years. Generally, only the base term of the PPA is taken into account because the lender has no assurance that the purchaser will elect to continue the PPA into a renewal term.

B. **Useful Life.** Because the purchaser under a utility-scale PPA effectively pays for the entire capital cost of the project (plus a profit to the owner), the purchaser of electricity from a large project may want the PPA to capture the entire value of the project by covering the entire economic life of the facilities. In that case, the PPA term may have a base term with one or more extension options. Because the entire capital cost of the solar power facility generally will be amortized over the base term of the PPA, it is possible to eliminate the cost elements that relate to the project debt from the power price during the renewal terms, making it less than the power price during the base term. The project owner thus preserves its return on the project but does not get a windfall return during the renewal terms.

C. **Effective Date.** A utility-scale PPA will be binding on the date it is signed (the "effective date"). This ensures that the purchaser will buy the output once the project is built and that the project owner will build the project and not sell its output to anyone other than the purchaser.

D. **Commercial Operation Date.** The term of the utility-scale PPA usually begins on the effective date, but the length of the term is often defined by reference to a "commercial operation date." For example, the term might end on the 20th anniversary of the January 1 next following the commercial operation date. Thus if the term were 20 years and commercial operation began on November 1, 2008, the term would end on January 1, 2029. In distributed generation solar PPAs, the term frequently begins on the commercial operation date and extends for a specified number of years.

"Commercial operation date" can be defined as the date on which all solar energy generation equipment and all other portions of the project necessary to put it into operation have been tested and commissioned and are both authorized and able to operate and deliver energy to the transmission system in accordance with prudent utility practices. In the case of a distributed generation installation that will not be utilizing significant interconnection and transmission, the commercial operation date can effectively be the date on which the installation is "finished" except for relatively minor punch-list items. A different approach to defining the commercial operation date may be appropriate with a utility-scale project.

"Commercial operation date" can be defined in a manner that allows the project owner to achieve commercial operation for one or more portions of the installation even if it has not installed all of the solar energy generation equipment called for by the PPA. For example, the PPA may call for an installed capacity of 15 MW, but the commercial operation date may occur as each 3 MW or 5 MW of capacity have achieved commercial operation (*i.e.,* when each designated portion of the project has been "substantially completed"). Consequently, if the necessary interconnection and transmission is installed before the full capacity of the project is completed, it is possible to have multiple commercial operation dates. This raises several potential issues between the developer or project owner and the power purchaser. For example, if the power purchaser wants only a single commercial operation date for the PPA, there may be output available from the project before that date. In some instances, this may be designated as "test period production," which can be sold to the power purchaser at a price different from the stipulated contract price under the PPA. However, due to the timing of when tax benefits from a solar become available, the developer or project owner may want to have the project reach sequential commercial operation dates faster, making the tax credit and benefits available earlier in the tax year, which potentially increases their value.

E. Termination Before the Commercial Operation Date. Both distributed generation and utility-scale PPAs usually include "off-ramp" provisions that enable one or both of the parties to terminate the PPA if certain events occur or fail to occur. Although the exact list of designated off-ramps will differ between distributed generation and utility-scale projects, common reasons for early termination of a utility-scale PPA may include (1) failure of a public utility commission to approve a PPA if the buyer is a regulated public utility; (2) inability to obtain an interconnection agreement or needed transmission rights; (3) inability to obtain leases, rights-of-way, or other land rights required to build the project; (4) inability to obtain permits required to build or operate the project; (5) inability to obtain an authorization to sell power at market-based rates; (6) failure of the project to reach a certain minimum size by a certain date; (7) failure of the project to achieve commercial operation by a certain date; and (8) inability to obtain certain subsidies and REC sales necessary to enhance the economic viability of the project. Termination rights require careful negotiation to make sure that all possibilities have been considered. A party is usually required to use diligent or reasonable efforts to satisfy the conditions set forth in the PPA before it can invoke the failure to satisfy such a condition as a reason to terminate the PPA (*e.g.,* the seller could not assert the inability to obtain a permit as a basis for terminating the PPA unless the seller had used diligent efforts to obtain the permit).

III. Purchase and Sale.

A. Delivery Point. The PPA will require the sale of energy to occur at a specified delivery point. For larger-scale projects, if the energy is to be delivered from the installation in a "busbar" sale, the delivery point will usually be the high side of the transformer at the project's substation. In a busbar transaction, the buyer provides the transmission required to transmit the energy from the plant to the point where the buyer intends to use it (or to deliver it to another party in a resale transaction). The PPA may also require the seller to deliver energy to a specific point some distance from the plant, in which case the seller will be responsible for securing the required transmission to the delivery point, and the buyer will be responsible for obtaining the transmission required to take the energy from the delivery point. Transmission ancillary services can be fairly costly and should be specifically allocated in the agreement. Title and risk of loss pass from seller to buyer at the delivery point.

B. Pricing.

1. **Contract Rate.** Price is usually the most important part of the PPA. The price may be flat, escalate over time, or contain other features. An escalating price is often tied to a "contract year" that begins at a specified point after the commercial operation date is achieved, thus encouraging the seller to lock in the initial price and the escalation rate by achieving commercial operation as soon as possible.

2. **Test Energy Rate.** Because a solar energy facility may have some generating facilities come online in stages, the PPA may require the purchaser to buy power from the solar energy facilities as they are installed, connected, and made operational, even though the project as a whole has not achieved its commercial operation date. To encourage the seller to achieve commercial operation as soon as possible, such energy might be sold at a test energy rate, which is often lower than the contract rate that will be paid once the commercial operation date is reached.

3. **Excess Rate.** A PPA often requires the seller to specify how many MWh the plant is expected to produce each year. This output estimate may form the basis of an output guaranty or a mechanical availability guaranty. To encourage the seller to make an accurate estimate of expected output, the seller may be paid less than the contract rate for each MWh of energy in excess of, for example, 110 percent of the estimated annual output. Because utility-scale PPAs factor in a number of considerations other than the straightforward "we produce it, you buy it" structure of a distributed generation solar PV PPA, output estimates and benchmarks are likely to play a larger role in the negotiation and pricing of a utility-scale solar PPA.

C. Environmental Attributes. Environmental attributes are credits, benefits, emissions reductions, environmental air-quality credits and emissions-reduction credits, offsets, and allowances resulting from the avoidance of emission of a gas, chemical, or other substance that would otherwise have resulted from generation of an equivalent amount of energy from a nonrenewable source. These environmental attributes will attach and be available to the solar power project during the term of the PPA, together with the right to report those credits. Environmental attributes are sometimes called "green tags," "green tag reporting rights," or "renewable-energy credits." The PPA usually makes clear that tax credits and any solar power financial incentives (such as rebates or grants) are not part of the environmental attributes, and thus are not being conveyed to the purchaser.

The PPA should clearly state whether energy is being sold with or without the environmental attributes. If environmental attributes are being sold, the seller will usually warrant title to the attributes but will not warrant the current or future use, character, or value of the attributes, or whether and to what extent they will be recognized by law. In effect, the purchaser assumes the risk that the law or the market might change in a way that reduces the value of the environmental attributes.

D. Allocation of Taxes and Other Charges. The PPA should specify who pays any sales, excise, or other taxes arising from the transaction. Although most states do not tax wholesale energy sales, the parties may wish to consider allocating tax liability resulting from future legislation.

IV. Permitting and Development.

A. Commitment to Develop. The PPA will make the project owner responsible for developing and constructing the project. The seller usually prefers a PPA that requires it to sell the project's output only if the project is actually built. A buyer tends to view such a PPA as a put and will usually insist that the seller commit in some fashion to develop the project. Many tense negotiations revolve around what the seller will or will not be required to do to develop the project, as well as off-ramps each party has if the project does not achieve certain stated milestones.

B. Status Reports. The buyer is typically interested in ensuring development of the utility-scale project because it needs to know when the energy will be delivered onto its system or when it will need to take a hedge position to cover the renewable source electricity it may not be receiving from this particular project. As a result, the PPA usually requires the seller to deliver regular reports to the buyer about the status of permitting and construction.

C. Milestones and Delay Damages. The PPA for a utility-scale project is very likely to include a schedule of certain project milestones (*e.g.,* the date by which the seller must secure project financing, the date by which the solar energy technology must be ordered, the date by which all permits and the interconnection agreement must be in place, and the commercial operation date). If the seller fails to achieve a milestone, the buyer may have a right to terminate the PPA, collect delay damages, or require the seller to post additional credit support. The seller will therefore want to limit the number of milestones and bargain for some flexibility, especially in cases in which a delay in achieving an interim milestone is not likely to delay a project's completion date. Sellers sometimes prefer PPAs that provide that the buyer's only remedy if the seller fails to meet a project milestone is to terminate the PPA without recovering damages. Buyers are concerned that this gives the seller a right that resembles a put and strongly prefer to require the seller to suffer some consequences if project milestones are missed. Many interesting negotiations revolve around off-ramps the seller will have versus damages it will pay to the buyer if it fails to build the project in accordance with the PPA. A common middle ground is for the seller to agree to pay delay damages up to an agreed-on cap, which defines the limits of the seller's exposure if the project is not built but gives the seller an incentive to use diligent efforts to finish the project on time.

V. Interconnection and Transmission. The PPA usually requires the seller to bear the cost of interconnection (including any network upgrades required by the new project) and all costs of transmitting the energy to the delivery point. If the seller is the project owner (as opposed to a marketer), it will also be responsible for negotiating the interconnection agreement with the transmission provider. However, different requirements, dictated by the interconnecting utility's rules and applicable state law, may apply. The buyer will be responsible for arranging and paying for transmission from the delivery point to the buyer's ultimate point of integration into the buyer's distribution system. (For further reading on interconnection and transmission-related issues, see Chapter Five, Regulatory and Transmission-Related Issues.)

VI. Performance Incentives. A seller of output from a utility-scale solar project will usually prefer to enter into an "as-delivered" PPA. This means the seller is obligated to deliver only what the project actually produces. A buyer under a utility-scale PPA, however, will often require the seller to warrant or guaranty that the project will meet certain performance standards. Such guaranties usually enable the buyer to recover all or part of its incremental cost of purchasing replacement power in the market to the extent that the project fails to perform as expected. Performance guaranties enable the buyer to plan around the facility's expected output and strongly encourage the seller to maintain a reliable and productive project. Of course, even without performance guarantees, the PPA should address the consequences of the buyer causing or allowing shading of the solar power facilities, as well as other events that might give rise to the need to relocate the facilities to maintain the expected level of output. It can be anticipated that the siting of a utility-scale solar installation will pay far more attention to these shading and interference issues in the early design phases than is usually found in distributed generation installation in which the siting options may be more limited.

A. Output Guaranties. As mentioned above, in a larger utility-scale project, the PPA may include an output guaranty to the buyer. An output guaranty requires the seller to pay the buyer if the project's output over a specified period fails to meet a specified level. The period may be biannual, annual, or seasonal. The PPA usually allows the owner to operate the project for one or two years before the output test is applied, enabling the owner to fix any problems with the project. The owner should offer such a guaranty only if very confident about any meteorological data relied on, equipment reliability, and capacity factor. In particular, the seller should do the research necessary to determine whether the site is likely to encounter significant year-to-year variations in solar access, or whether the pattern will tend to average to a particular level over a historically significant period of years.

While some solar panel manufacturers have offered output warranties in the past, it is uncertain whether this will continue as the market develops. The more common warranty is an "availability warranty," as discussed below. The concentrated solar market, which does not use solar panels to generate electricity, will require a different analysis. The installation contractor is expected to provide or obtain for pass-through equipment warranties on items such as wiring, racking, or step-up transformers, and the other equipment necessary for the installation. In the case of solar PV distributed generation systems, the solar panel manufacturer and the inverter manufacturer are expected to provide separate reliability warranties on their equipment, which the installation contractor may be responsible for administering as part of its overall installation reliability warranty. In some instances, the installation contractor will request that the project developer separately purchase these items so that these warranties run directly to and are administered by the project developer. Outside of instances in which the panel manufacturer may warranty output at a specific level, the project owner will be expected to assume the risk that weather and other climate conditions at the project will produce enough energy to meet the project's revenue and performance requirements.

B. Availability Guaranties. The owner of a solar power facility may be more willing to offer the purchaser a mechanical availability guaranty than an output guaranty. Such an availability guaranty requires the solar power technology in the project to be available a certain percentage of the time, after excluding hours lost to force majeure and a certain amount of scheduled maintenance. Mechanical availability percentages may decline over the life of the project to reflect degradation. Due to the relatively new status of utility-scale concentrated solar projects, there remains some fair question as to what the actual degradation experience of these projects will prove to be, even with proper and regular maintenance.

Solar power technology manufacturers may provide availability warranties that support the project owner's mechanical availability guaranties for the first few years of the project. Such warranties may last only a few years. Thus the seller will be on its own if it chooses to give a mechanical availability guaranty that covers the period after a manufacturer's warranty expires.

C. Power Curve Warranties. The seller might also ask the solar power technology manufacturer to warrant the ability of the power technology to produce a specified output at specified levels of sunlight. This is different from warranting that an actual level of output will be produced. Instead, it is a warranty that it is "possible to" produce at certain specified levels given the sun's cooperation. The power curve represents a calculation of the amount of energy that the solar power technology is rated to produce at different conditions. Power curve warranties are intended to compensate the project owner for lost revenues resulting from inefficient technology operation; *i.e.,* the failure of solar power technology to operate within a certain percentage of the power curve. Power curve warranties are not typically passed through to buyers under PPAs. Instead, the funds received under such a warranty may be used by the seller to pay damages required to be paid to the buyer under an output guarantee. In the absence of such a guarantee the seller will keep these payments to offset reduced revenues from actual power sales.

D. Liquidated Damages. If the utility-scale PPA includes one or more of the guaranties discussed above, the PPA usually provides a mechanism for determining the damages suffered by the buyer if the benchmarks set forth in the guarantee are not met. First, the parties determine the relevant shortfall (for example, if in output, the shortfall as stated in MWh) relative to the performance that was guaranteed. Second, the shortfall will usually be multiplied by a price (per MWh or otherwise) determined by reference to an agreed-on index to arrive at a monetary value of required compensation. Because market indexes cover only power prices and do not include the value of environmental attributes, the PPA may include an adjustment to account for the assumed value of the environmental attributes or may use a firm price index as a proxy for the value of the energy plus the environmental attributes. The amount of liquidated damages is usually determined once per year. The seller would pay the liquidated damages to the buyer or credit the damages against amounts owed by the buyer under the PPA. The seller may also seek to cap liquidated damages on an annual or aggregate basis to mitigate its financial risk of providing these guaranties.

E. Termination Rights. To protect against chronic problems at an unreliable utility-scale solar power facility, the PPA usually allows the buyer to terminate the PPA if the output or mechanical availability of the project is below a stated minimum for a certain number of years. Although this termination right may be present in a distributed generation solar PV PPA, it is less common.

VII. Curtailment and Force Majeure.

A. **Curtailment.** Both utility-scale and distributed generation PPAs often describe circumstances in which either party has a right to either curtail output or refuse to accept deliveries, as appropriate. For example, the seller may have a right to curtail output if the plant is affected by an emergency condition. The PPA may permit the buyer to curtail accepting deliveries for convenience or due to immediate threats to safety or the integrity of the site location, in which case the PPA usually requires the buyer to pay the purchase price for the curtailed generation and the after-tax value of any subsidy or REC revenues that may be lost due to the curtailment. In a utility-scale PPA, facility curtailments caused by transmission congestion or conditions beyond the point of delivery are often handled in the same manner, though the topic of curtailment is frequently a difficult issue in utility-scale PPA negotiations.

B. **Force Majeure.** If energy is curtailed at a party's discretion or because the party is at fault, the PPA usually requires the curtailing party to pay damages to the other. If curtailment is caused by an event beyond a party's control, the party's duty to perform under the PPA may be excused. For example, if a disaster disables the transformer at the delivery point, the seller would be excused from delivering energy, and the buyer would be excused from taking and paying for energy, until the transformer is repaired. The party responsible for maintaining the transformer would, of course, be required to use diligent efforts to make repairs.

Parties often heavily negotiate force majeure provisions. Good provisions should carefully distinguish between events that constitute excuses (which relieve the affected party from its duty to perform) and those that are risks (which are simply allocated to a party). The ability to buy energy and environmental attributes at a lower price or sell them at a higher price is generally not a force majeure event. Moreover, a party's inability to pay should not constitute a force majeure event under the PPA. A well-drafted force majeure clause will usually list a number of items that both parties agree are force majeure events, as well as items that the parties agree are *not* force majeure events.

VIII. Operation and Metering.

A. **Operation and Maintenance.** The PPA generally outlines the seller's responsibility to operate and maintain the project in accordance with prudent operating practices. Such duties typically include regular inspection and repair, as well as completion of scheduled maintenance. If the project is located on the buyer's premises, the PPA should provide for access to and security of the project. In larger-scale projects, operation and maintenance ("O&M") is more likely to be carried out by employees or affiliates of the project developer than to be subcontracted out. This is a point that also distinguishes larger utility-scale solar generation projects from smaller distributed generation projects, and that usually has a direct interaction with the types of warranties the project developer will seek from the installation contractor.

B. **Metering.** The metering provision is one of the most important in the PPA because it is used to determine the quantity of output for which the seller will be paid. The PPA usually requires one party (typically the seller) to install and maintain a meter. The other party typically has the right to install a check meter. If the seller's meter is out of service or generating inaccurate readings, the PPA should specify how the parties will determine the project's output. Tests should be conducted regularly to verify accuracy of the seller's meters. The PPA usually states how often such tests will occur, at whose expense, and what form of notice will be given to each party. The PPA should specify how much variance in the meter's accuracy will be permitted and how repair or replacement of defective meters will be handled. A utility-scale PPA or a distributed generation PPA with a utility may require the seller to provide the buyer with real-time output data, which will significantly increase the cost of the metering equipment required to be provided by the seller.

IX. Billing and Payment.

A. Billing and Payment. The PPA typically determines how invoices are prepared, when they are issued, and how quickly they are paid. The billing provision often states that an invoice is final if not challenged within a period of time. The PPA usually sets forth procedures for raising and resolving billing disputes, and the interest rate and penalties that apply to late payments.

B. Right to Audit. The buyer will typically have the right, on reasonable notice, to access those records of the seller necessary to audit the reports and data that the seller is required to provide to the buyer under the PPA.

X. Defaults and Remedies. The PPA will usually list events that constitute defaults. These may include:

- failure by any party to pay an amount when due;
- other types of material defaults, such as the seller's failure to use commercially reasonable efforts to achieve a material project milestone;
- the bankruptcy, reorganization, liquidation, or other similar proceeding of any party; and
- a material default by a party's guarantor.

The default clause should specify how long the defaulting party has to cure a default. If the default is not cured within the agreed-on period, the nondefaulting party usually has the right to terminate the agreement and pursue its remedies at law or in equity, to suspend performance of its obligations, or to seek specific performance and injunctive relief. The remedies clause may also limit remedies or place a cap on a party's damages—for example, in some PPAs, the buyer's only remedy for the seller's failure to achieve a given milestone is to terminate the PPA without seeking damages.

XI. Project Lenders and Equity Investors. Even if the project is expected to be financed off a developer's balance sheet, the terms of the PPA will usually take into account the possibility that the PPA will be assigned to a lender as collateral for project debt. The PPA will therefore contain provisions authorizing the seller to assign the PPA as collateral, requiring the buyer to provide consents, estoppels, or other documents needed in connection with financing, and giving the lender various protections (including additional time to cure defaults).

The PPA may also include provisions to address the concerns of future equity investors (especially, if available, tax equity).

XII. Boilerplate and Examples. The PPA will also address boilerplate matters, such as confidentiality, representations and warranties, the right to pledge the PPA to project lenders, governing law, the limitation of consequential damages, dispute resolution, consent to jurisdiction, and waiver of jury trials. If the transaction between the parties involves complex calculations, the PPA should also include a number of carefully considered examples that illustrate how those calculations will work in certain scenarios.

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Law Practice

Bill Holmes concentrates his practice in the area of energy law, with a special emphasis on wind, geothermal, biomass, tidal and ocean power, and other forms of renewable energy. He also has extensive experience with real estate law, water law, and general corporate transactions. Bill has been selected to be included in the 2007 and 2008 editions of *The Best Lawyers in America* in Energy Law and Environmental Law. Bill is the Energy and Telecommunications (ENTEL) practice group leader at Stoel Rives.

Prior Legal Experience

Bill joined Stoel Rives as an associate in 1985 and has been a member of the firm since 1992. Before joining the firm, he served as Law Clerk to Judge Louis F. Oberdorfer, United States District Court for the District of Columbia (1984-85).

Representative Transactions and Energy Clients

Bill has represented clients in the negotiation of numerous major power purchase agreements on both the "buy" and the "sell" sides. This experience includes work on many major wind power purchase agreements, including the agreement under which PPM Energy, Inc. purchases the output of the 300-MW Stateline Wind Project in Oregon and Washington. Bill has also advised clients in the negotiation of acquisition agreements for energy assets and companies, EPC agreements, O&M agreements, management agreements, LLC agreements, energy project development agreements, fuel supply agreements, and related documentation. He has represented renewable energy clients in negotiations with a range of counterparties, including Idaho Power, PacifiCorp, Pacific Gas & Electric (PG&E), Southern California Edison (SCE), San Diego Gas & Electric (SDG&E), Snohomish PUD (SnoPUD), Sacramento Municipal Utility District (SMUD), and Kansas City Power & Light. Representative clients include PPM Energy, Inc., enXco, Inc., Horizon Wind Energy, Sierra Geothermal, Centennial Power, Hampton Resources, and Rough & Ready Lumber.

Professional and Firm Activities

American Wind Energy Association; Member, Oregon State Bar Public Utility Law Section; Member, American Bar Association Energy and Natural Resources Section; Practice Group Leader, Stoel Rives LLP, Energy and Telecommunications Practice Group; Chair, Stoel Rives LLP Technology Committee.

Civic and Charitable Activities

United Way Leadership Giver; President of the Board of Directors, Portland Habitat for Humanity (1995-1997); member of the Board of Directors of Portland Habitat for Humanity (1992-1997); pro bono counsel, Portland Habitat for Humanity (1987-1995, 1997-2000).

Education

J.D., magna cum laude, University of Michigan Law School, 1984

- Certificate in water law; certificate in environmental law
- Associate editor, Michigan Law Review, 1982-83
- Editor in chief, Michigan Law Review, 1983-84
- Henry M. Bates Memorial Scholarship
- Abram W. Sempliner Memorial Award

B.A. with highest honors, Plan II honors program, Order of the Coif; Phi Beta Kappa University of Texas, 1981

Admissions

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Publications

Co-Author, “Power Purchase Agreements” in Chapter 8 of *The Law Of Ocean and Tidal* Energy (Stoel Rives); Co-Author, "Power Purchase Agreements and Environmental Attributes," in Chapter 4 of *The Law of Wind* (Stoel Rives); Co-Author, "Power Purchase Agreements and Environmental Attributes," in Chapter 4 of *Lava Law* (Stoel Rives); Co-author, "Water Rights and Transactions," Fundamentals of Real Estate Transactions (2001 Cumulative Supplement); Author, "Dams for Sale: The Ins and Outs of Federal Facility Transfers," 43 Rocky Mt Min L Inst 24-1 (1997); coauthor, "Bureau of Reclamation Contract Renewal and Administration: When is a Contract Not a Contract?" 41 Rocky Mt Min L Inst 23-1 (1995); coauthor, "Employee Benefits and ERISA Considerations in Natural Resources Transactions," 34 Rocky Mt Min L Inst 5-1 (1989); coauthor, "Natural Resources, Energy and Environmental Law," 1987 Oregon Legislation § 21 (Oregon CLE 1987); coauthor, "Reporting Violations of Hazardous Substances Law: Mandatory Self-Incrimination," Or Envtl & Nat Resources L News, at 4 (fall 1986).

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Law Practice
John Eriksson's practice at Stoel Rives LLP is focused on energy law, primarily in the electric utility industry. He has represented electric energy companies in a variety of transactions, including power purchase and sales agreements, natural gas purchase and storage, and coal purchase and transportation agreements. He has also represented regulated utilities in a wide range of regulatory proceedings before state utility commissions, and in litigation in state and federal courts.

John now focuses his practice on representing independent energy clients, advising them regarding state regulatory issues and negotiating and drafting agreements related to renewable energy projects, including agreements for power sales and renewable energy credit sales.

Prior Legal Experience
Attorney, Utah Power & Light/PacifiCorp (1986-1992).

Community Activities
Chair, Centerville City Board of Adjustments.

Education
J.D., University of Utah, 1986

William H. Leary Scholar, 1986

B.S. *magna cum laude*, Phi Kappa Phi,
Weber State College, 1979

Admissions
State bar of Utah

U.S. District Court of Utah, 1986

U.S. Court of Appeals, 9th and 10th Circuits

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Law Practice

Jennifer Martin is a member in the Portland office of the Energy Group and Renewable Energy Initiative. Her practice focuses primarily on representing renewable energy developers on a variety of energy-related matters before state and federal agencies. She has experience before state public utility commissions in the Western United States and the Federal Energy Regulatory Commission representing both utility and independent power producer interests. Jennifer also advises developers on power purchase and interconnection agreements and transmission service issues.

Prior Legal Experience

Judicial Clerk, Minnesota Supreme Court (1999-2000); Senior Note and Comment Editor, *Journal of Gender Race and Justice* at University of Iowa College of Law (1998-99); summer law clerk, Stoel Rives (1998); research assistant, Professor David Baldus, University of Iowa College of Law (1997-99); clerk, Circuit Court of Cook County (1993).

Representative Matters

Representation of energy clients including wind and solar developers in administrative litigation and rulemaking matters before the Federal Energy Regulatory Commission (FERC), including Section 205 applications and approvals for FERC-jurisdictional sales, QF and exempt wholesale generator issues, market rate authority, Section 203 transfer of jurisdictional assets; investigations into compliance, and other issues.

Representation of renewable energy developers in drafting and negotiating power purchase and renewable energy credit (REC) agreements and in obtaining interconnection and transmission services.

Representation of energy efficiency clients on state regulatory and renewable energy credit (REC) issues and drafting customer participation agreement.

Professional and Community Activities

Oregon State Bar Public Utility Law Section; American Bar Association Public Utility Law Section; Energy Bar Association; Multnomah Bar Association; Western Power Trading Forum; Oregon Women Lawyers; volunteer instructor, YMCA, Northern Ireland (1995-96).

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Education

J.D., University of Iowa College of Law, 1999

B.A., English and gender studies, University of Notre Dame, 1995

St. Patrick's College, University of Notre Dame foreign study program, 1992-93

Admissions

State bar of Utah, Oregon

U.S. Court of Appeals for the Ninth Circuit

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Chapter Four
LEX HELIUS: THE LAW OF SOLAR ENERGY
—Solar Energy System Design, Engineering, Construction, and Installation Agreements—

Alan R. Merkle, Karl F. Oles, Rosemary A. Colliver

This chapter provides an overview of the contractual structures commonly applied to the construction and installation of distributed generation, on-site, solar energy projects. All solar energy projects consist of three major components: procurement of the photovoltaic ("PV") and related equipment and materials, electrical engineering services connecting the system to the larger electrical system, and construction and installation of the system. These services are generally provided under one of three basic delivery methods: via design-build by a general contractor, via design-build by a prime architect, or through separate owner/developer-procured subcontractors. Although the major difference between these scenarios is that different parties are contracting directly with the solar energy system subcontractors and suppliers, it is important for the owner/developer to understand the basic duties and obligations that should be included in the agreements with these entities and how those agreements affect the owner/developer's rights down the road.

This overview is written from the perspective of a solar energy project owner/developer; however, the information herein should interest design and engineering, construction, and operations and maintenance contractors as well. As with any complex negotiated transaction, there is considerable value to be won or lost by all parties and significant potential for using creative legal strategies to increase value for both sides of the table. This works best when all the parties involved have the most information possible.

I. Construction-Related Agreements. Critical to the actual development of any solar energy project are the various agreements a project owner must enter into in relation to:

- design and engineering of the solar energy system;
- procurement of necessary equipment and materials, such as PV panels, mounting racking, inverters, a collection system, step-up transformers, and pads;
- obtaining the engineering, construction, and installation services necessary to construct and install the equipment and materials, including the electrical interconnection facilities, either as a subcontractor of the design-builder or in cooperation with the design-builder as a third-party contractor procured by the owner; and
- commissioning, operation, and maintenance of the completed system.

If the above services are being furnished by the design-builder on the project, it will be necessary to ensure that the appropriate provisions are included to allow the owner of the structure on which the system is housed to enforce or benefit from the warranties and obligations of the subcontractor agreements. If you are entering into direct agreements with the suppliers of equipment, materials, design or engineering services, construction or installation services, or any combination thereof from any one entity, it will be necessary to coordinate these agreements, generally known as the engineering, procurement, and construction agreements, and often collectively referred to as "EPC agreements."

These agreements generally also provide for or anticipate other services, such as warranty services or operations and maintenance services for the equipment and related facilities. In the design-build context, these services are provided by the general contractor or prime architect under one or more traditional construction and design agreements.

Often the design and engineering, procurement, and construction and installation services are addressed in a single agreement (an "installation agreement"), such as when there is a single entity responsible for the whole project. Depending on the contractual structure, however, provisions related to product or service warranties, insurance coverage, and other matters may be addressed in the full wrap agreement or may be addressed in individual agreements. Therefore understanding how these issues impact each other is essential for creating a set of coordinated agreements.

II. Design and Engineering Services. Solar power projects require certain design and engineering expertise that is unique to this sector of the power generation industry. The designers and engineers must coordinate their services with the structural and electrical designers and engineers working on the structure to ensure proper integration and scheduling. Historically, relatively few companies designed, engineered, and manufactured solar energy generation equipment, PV or thin film panels, or solar thermal and concentrated solar units. Today there are a number of manufacturers in each of these areas.

With the growth and monetization of the industry and the maturation of incentives, new vendors are entering the market regularly. Currently, solar technology provides for various systems, from solar thermal hot water or concentration systems to silicon cell or thin film PV generation panels. The needs and requirements for any particular project, however, are in part dictated by its operating parameters, which are in turn dictated by the project's purpose, energy load, location, and expected dependency of production of the system.

For instance, the weight tolerance of a rooftop installation will be very different from the weight tolerance of a ground-mount installation. Consequently, much lighter panel designs are likely to be necessary for a rooftop installation even if the rated output is the same.

III. Construction and Installation Services. Different systems are generally predesigned components that are aggregated and installed to suit a project's needs. Nonetheless, substantial design and engineering work must still be performed at the project site to integrate the chosen system or systems into the project, including the necessary interconnection requirements. These design and engineering services, and related procurement and construction work, may be performed by the supplier of the solar equipment and materials under one or more agreements, but are often provided by a third party contracting directly with the project owner/developer or design-builder.

IV. Typical Contractual Structure for a Distributed Generation Solar Project. Given the multiple factors influencing the development of a distributed generation solar energy project, no single contractual structure applies to all projects. However, the following example of a contractual structure used for a particular project illustrates, in a limited way, how a project owner, its design-builder or general contractor and prime architect, and a solar equipment supplier might address certain common concerns.

In this example, a project owner wants to install a PV system on its building to provide a portion of its electrical needs. The owner wants to have the same entity design, install, test, and commission the system, as well as construct the electrical interconnection facilities and ensure a minimum yearly electrical output. The owner also wants to make sure it can enforce any warranties provided by third-party subcontractors and suppliers of materials and equipment, and wants liquidated damages for any delays that might affect its business or ability to claim tax credits for the system under state and federal tax codes.

The project owner and the solar contractor enter into a solar installation agreement whereby the contractor agrees to design, install, test, and commission an 870-kW PV system, including necessary interconnection facilities, on the owner's property.

Under the agreement, the owner has the right to review all subcontracts for equipment and design and installation services entered into by the contractor, and any such subcontracts are required to contain certain provisions for the benefit of the owner. The agreement also provides for delay liquidated damages, whether or not federal tax credits are lost due to the delay. Finally, due to the electrical integration element of such a project, the agreement provides that final completion (whereby final payment is due to the contractor) is conditioned on approval of the project by the local utility and receipt of all appropriate electrical inspection certificates.

The slate of issues that the parties address in the installation agreement includes the scope of work, inspections and testing, liens, measures of completion, rebates and subsidies, system and work warranty obligations, coordination of activities, permitting reports, title and risk of loss, energy guarantees, and limitations of liability.

A. Scope of Work. In the example above, the parties placed great emphasis on the description of the scope of work set forth in the installation agreement. Scope-of-work provisions should describe, in detail, the actual design, engineering, and construction obligations of the contractor, as well as their coordination with other service providers on the project. The scope of work should incorporate the system's performance and design specifications by reference to either an attached annex or a specific set of separately prepared plans and specifications. Generally, whatever is not provided for in the contractor's scope of work is the project owner's responsibility to complete or to contract with third parties to complete. A solar energy system contractor's scope of work typically includes the design and engineering of the system, including its principal parts and components, such as PV panels, the racking system, and the interconnection facility, as well as the start-up, testing, and commissioning of the system. The design services will also include the licensing of any proprietary rights associated with the solar equipment. The contractor's services will include management and payment of all suppliers and subcontractors necessary to complete the solar energy project. Finally, the contractor will also be required to prepare an operations and maintenance manual for the system and perform system-related warranty work. The contractor's scope of work may include providing operations and maintenance services for a set number of years after completion of the system. These services may also be the subject of a separate agreement. As with other aspects of such an agreement, the scope-of-work provisions will probably be heavily negotiated. Care must be taken to coordinate the scope of services being provided by the contractor with the scope and timing of services being provided by third parties on the project to minimize conflicts or gaps.

B. Completion and Start-Up Obligations. By whom, when, and how the solar energy system is to be commissioned is usually set forth in the scope-of-work provisions of the relevant agreement. Given a solar contractor's in-depth knowledge of its products, the contractor (or its design subcontractor) is often the party delegated to erect, install, and commission the system. However, this work can also be undertaken by the project owner/developer (with assistance from the contractor) or by a third party contracting directly with the project owner/developer. In any case, attention is given in the agreement to the stages of completion, such as actual delivery of the equipment to the project site, followed by erection, installation, start-up, and testing. Once these progress milestones are established, completion is generally evidenced by the contractor's certifications of, for example, "substantial completion" (or "commercial operations"), "final completion," and "final sign-off." As with other supply- and construction-related agreements, progress payments by the project owner/developer to the contractor (as set forth in the relevant agreement) would be based, in part, on the milestones described above. For instance, the owner/developer typically pays a certain amount toward the agreed-on contract price when the order for equipment is submitted and makes additional payments on (1) the delivery of the equipment and related components to the project site, (2) the erection and installation of the equipment, (3) the installation, related testing, and commissioning of the system, and (assuming the foregoing stages are executed properly) (4) the final sign-off by the parties on the project. The payment schedule can also be based on monthly applications for payment based on expenses and labor incurred in the foregoing period, with a percentage holdback (or possible repairs, claims, or liens) to be released at the time of final sign-off. Or the parties can negotiate milestones that suit the project (or their desire or ability to manage certain risks) accordingly.

C. Warranty Obligations. Warranty-related obligations are likely to be an issue of substantial negotiation between parties to solar energy system installation agreements, as well as any separate supply agreements entered into between a contractor and equipment supplier. The nature and scope of such warranties will, however, depend on what services, materials, and equipment that party is contracted to provide. An equipment supplier's warranties generally include such things as a general parts warranty (the definition of a defect can be important when determining what is included or excluded as a defective or nonconforming part or component in a solar energy system or related facility), a power curve warranty (this refers to the measurement of a solar equipment component's power performance), and related matters. For a contractor providing only installation services and materials, the warranties are generally limited in scope relative to those of an equipment supplier, but would still include warranties relating to parts and materials used in installation and any engineering services provided. If both equipment and installation services are provided by the same contractor, or through subcontractors, it is important to ensure that the owner/developer has the right to assert direct claims under warranties provided by third parties. It is also necessary to specify with a contracting party minimum terms that must be negotiated into third-party agreements.

The issues that contracting parties consider in respect of warranties include (1) the period or term of a particular warranty and whether the term can be extended (it is common for a supplier to offer certain extended warranty services for an agreed-on price), (2) the definition of a defect and a serial defect (important in projects in which solar energy equipment uses identical parts and components; serial defects are those that appear in multiple components), (3) limitations on warranty arising from acts of third parties (such as operation and maintenance contractors or the system operator), and (4) the remedial measures a contractor may take to repair or cure any defect. Additionally, as mentioned earlier, a project owner/developer may require that any third-party or subcontractor warranties that the supplier or contractor possesses in respect of any parts or components used in the system are "passed through" to the project owner/developer.

D. Limitation of Liability. Like other contractors and vendors, suppliers and contractors may seek to limit their liability to a project owner/developer. The provisions in a relevant agreement will usually exclude liability for consequential, indirect, incidental, or special damages. A contractor will usually seek to have whatever damages it may be liable for limited to liquidated damages of a certain value, usually an agreed-on percentage of the value of the relevant agreement. The parties may specify the maximum aggregate liability a contractor may have. However, the parties can, by agreement, carve out of any such limitation additional liability for the contractor. For instance, the contractor could agree that its maximum aggregate liability would not apply to its liability for delay-related damages arising from the project owner/developer's failure to (1) satisfy its contractual commitments under a power purchase agreement, if an event in the contractor's control caused those damages, or (2) obtain a certain time-sensitive benefit or credit, such as a tax credit, because of contractor-caused delays.

E. Solar Tax Credits. The economics of a solar energy system, and an overall project budget, often depends on obtaining certain benefits provided under state and federal law for renewable energy projects, including the federal solar tax credit ("STC") found in IRC section 48. The STC is a tax credit equal to 30 percent of the tax basis of any energy property, including certain solar energy equipment. This same equipment can qualify for greatly accelerated depreciation deductions that can be taken over five years using the double declining balance method. The property currently claiming these federal tax credits must be placed in service on or before January 1, 2009 (as recently extended). States such as Oregon and California offer additional state tax credits applicable to the installation of solar energy equipment. The loss of the STC, or of similar state and federal benefits, can be very serious because the benefit, once lost, may never again apply to the project (unlike damages for failure to achieve an operational status for purposes of net metering, which would likely be limited to the actual period of delay), and thus could have long-term economic consequences. STC-related damages are usually the subject of much negotiation between the supplier or contractor and the owner/developer. Insurance coverage may be available for certain delay-related risks, including failure to qualify for an STC.

V. Other Issues.

A. Financing Issues. A project owner/developer often requires some form of substantial debt financing or joint venture financing to pay for the design, engineering, procurement, construction, and initial operations of the project. Financial institutions and potential investors will demand the opportunity to review and comment on a project's design and engineering, procurement, and construction agreements (as well as related operations and maintenance and warranty agreements, if separate) before committing funds. Of special interest to prospective lenders and investors are the provisions in the agreements that provide the lender or investor with the ability to take over the project if the project owner/developer (the borrower) defaults, and the provisions that specify the extent and nature of any damages available to a project owner/developer from a contractor. Also, financial institutions will want to comment on the payment plans and security, warranty, and inspection provisions set forth in the project agreements.

Due to such involvement, and to avoid issues arising from any potential inconsistencies, the project owner/developer should be prepared to present a consistent and cogent set of project agreements to lenders and investors, and to listen to their suggestions for such agreements. Further, the owner/developer should be prepared for the possibility that lenders and investors may want to make substantial changes in the negotiated agreements. For instance, lenders will often be interested in the project's financial and operational viability (as may be reflected in a feasibility study), and much of that interest will necessarily focus on the project owner/developer's rights under the relevant agreements. In particular, lenders will be interested in the extent, limitation, and operation of any contractor warranties, contractor indemnities, insurance policies, progress or performance-test milestones and payments, and performance and payment guarantees. Lenders will also want to know whether the various agreements are entered into on an "arm's-length" basis, meaning (among other things) that the terms and conditions of such agreements are based on typical commercial terms and standards.

B. Performance and Payment Guarantee Issues. A project owner/developer should cause the various contractors to procure, for the benefit of the owner/developer, performance and payment bonds (or other guarantees) to secure the obligations of the various contractors (whether engineers, contractors, or other parties) to complete their work on time and in accordance with the requirements of their various agreements, and to protect against liens and claims from unpaid contractors and subcontractors. Some of the issues arising with respect to these guarantees are described below.

- *Performance Bond:* A performance bond is usually issued by a bank or bonding company, is selected or approved by the project owner/developer, and states an agreed-on "penal sum." This sum is payable upon the owner/developer's demand in the event that the contractor fails to perform its contractual obligations in a proper and timely manner. For instance, when the contractor defaults or cannot complete the project, the owner/developer may call on this bond to pay another contractor to complete the project. The owner/developer will want to reserve its other rights against a defaulting contractor in the event that the performance bond does not fully cover the owner/developer's costs (1) of completing the project or (2) associated with damages the owner/developer may owe to a third party as a result of any default by the owner/developer.

- *Payment Bond:* A payment bond is intended to ensure that if the contractor defaults on the project, its subcontractors and suppliers will be paid without the necessity of filing liens or other security interests against the project owner/developer's property. If a lien claim is asserted, it may be "bonded-over" so that it attaches to the payment bond or other security instead of the property. Lenders, upon their review of the agreements, may demand or require payment bonds or other guarantees to enhance their security interests in the project.

The project owner/developer or the lenders may require other security from contractors, such as parent guarantees, standby letters of credit, and other forms of assurance. The contractors will demand to be given ample opportunity to cure any default or delay, and will seek to limit the project owner/developer's ability to call in performance or payment bonds or other security without notice. Further, contractors will usually demand some form of reciprocal security issued by the owner/developer or its parent company, including parent guarantees, payment guarantees, and the like.

C. **Liens and Releases Issues.** When the project owner/developer makes periodic payments to contractors (and thus also to subcontractors and suppliers), the owner/developer should obtain a lien release from each contractor and have each contractor obtain the same from its subcontractors and suppliers. A lien release will help protect the owner/developer from liens being filed on the project by subcontractors that have not been paid by the primary contractor. Such liens are undesirable because, once filed, they can delay or interfere with the project's financing. Worse still, if a lien claimant is successful, such a lien could be used to force the sale of the project, or part of it, as well as to interfere with the sale or further financing of the project by the owner/developer. Many financing agreements will also consider a lien a breach of the agreement.

D. **Insurance and Indemnity Issues.** A project owner/developer should obtain appropriate indemnities and insurance coverage from the various parties with which it contracts, and should require those parties to obtain similar protections from their subcontractors and material suppliers for the benefit of the owner/developer. Relevant indemnities include a general indemnity for personal injury, death, and property damage claims, contractor and subcontractor lien indemnities, an indemnity for taxes (other than those attributable to the owner/developer), an indemnity for violation of applicable laws, and an indemnity for intellectual property infringement claims. Appropriate insurance policies include commercial general liability, workers' compensation and employer's liability, automobile, errors and omissions (for design and engineering services), and builder's all-risk (for the project). Such policies should name the owner/developer and its financing party as additional insureds and contain appropriate waivers of subrogation. Appropriate policy limits will vary with respect to the nature of the work being performed and the scope of the project. It is advisable for an owner/developer to consult with an insurance or risk management specialist to ensure that appropriate types and levels of coverage are obtained.

VI. Current Developments. As the industry has matured and market demands have accelerated because of public interest in climate change, greenhouse gas emissions, and energy efficiency, relative bargaining positions have changed significantly. A few short years ago, solar energy was prohibitively expensive technology for the average commercial developer and for all but the environmentally committed individual home builder. Now, with the combination of incentives, the influx of research and development aimed at making solar energy financially feasible in all markets (including potential third-party financing and solar energy system leasing programs), and robust expansion in solar energy technologies, the on-site solar energy market has expanded dramatically. Now creative and experienced developers are working with new players and creative strategies to implement on-site solar energy technologies in their developments—with great success.

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Alan Merkle practices primarily in the areas of energy and infrastructure development, construction and design, and utility matters. He represents owners, developers, engineers, architects, contractors, manufacturers and suppliers in a wide array of business matters with particular emphasis on development of renewable energy projects. He is experienced in the drafting, negotiation and administration of contracts, including equipment supply, EPC and O&M agreements. He also handles claims, litigation, arbitration, mediation and other alternative dispute resolution matters. In addition to serving as an advocate, he regularly serves as a neutral on Dispute Review Boards and as a mediator and arbitrator. Before practicing law, Mr. Merkle managed the business and technical sides of major energy construction, engineering and manufacturing projects. Alan has been repeatedly named one of Washington's "Super Lawyers" by *Washington Law & Politics*, one of Seattle's "Top 100 Lawyers" by *Seattle* magazine, is an honorary AIA and a biography in *Who's Who in American Law* and *Who's Who in the World*.

Professional Activities
Past chair, Public Procurement and Private Construction Law Section, Washington State Bar Association; past board member and Legal Affairs Committee chair, Associated General Contractors of Washington; member, WSBA Litigation Section, Oregon State Bar Association Construction Law and Litigation Sections, American Bar Association Public Contract Law and Litigation Sections, Federal Energy Bar Association; board member, Seattle chapter, American Institute of Architects; American Arbitration Association mediator training program.

Sample Publications and Presentations
Frequent speaker and writer on subjects of turbine supply and warranties, operating and maintenance, and EPC agreements for wind, geothermal and biofuels industry. Author, "Licensing and Registration" chapter, Oregon State Bar publication, Construction Law; author, "Damages" chapters and chair of WSBA program "Architect and Engineer Liability;" author, "Construction Liens" chapter for WSBA; author and speaker, "Public Contracting in Washington"; chair, Public Works Symposium; author and speaker, "Advanced Construction Law," National Business Institute; author and speaker, "Washington Construction Law," Law Seminars International.

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Registered professional engineer in Washington, Oregon, and Idaho. Active in the power generation, construction, engineering and manufacturing industries for 12 years while managing various General Electric Company operations.

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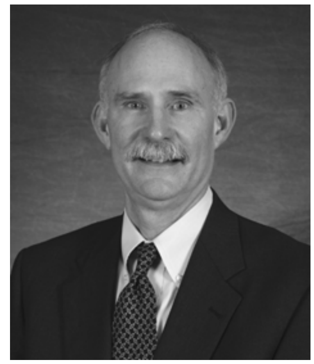
Former Council member and Mayor, City of Mercer Island.



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Partner (1995-2005), associate (1987-1995), Danielson Harrigan Leyh & Tollefson; clerk, Honorable Robert R. Beezer, Ninth Circuit (1986-1987); extern, Honorable Eugene A. Wright, Ninth Circuit (1986).

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Rosemary Colliver practices real estate development, renewable energy, construction and intellectual property law and she co-chairs the firm's Sustainable Real Estate Development Initiative. Her practice focuses on construction and business litigation and drafting agreements and counseling clients involved in "green building" development projects and entertainment and copyright related ventures.

Prior Legal Experience
Associate, Liner Yankelevitz Sunshine & Regenstreif LLP, Los Angeles (2003-06); associate, Freund & Brackey LLP, Beverly Hills, California (1999-2003); legal intern, Paramount Pictures Corp., Los Angeles (1999); consumer representative, Washington State Office of the Attorney General (1996-98).

Publications
Author, "Integrated Design—the Key to Green," in chapter 1 The Law of Building Green (Stoel Rives); author, "Assessing and Allocating Risks," in chapter 2 in The Law of Building Green (Stoel Rives).

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Chapter Five
LEX HELIUS: THE LAW OF SOLAR ENERGY
—Regulatory and Transmission-Related Issues—

Seth D. Hilton, Jennifer H. Martin, Jason A. Johns

Long before a solar developer begins generating the first kilowatt of power, the developer must decide on a regulatory structure for the project, negotiate and execute net-metering or transmission and interconnection agreements, and purchase necessary transmission and ancillary services or distribution-level services. Solar developments come in many different forms, and business models range from installations for the installer's own electric needs and sales directly to third-party retail customers to large, utility-scale solar developments dozens or hundreds of megawatts in size. Whether and to what extent the developer will be subject to regulation for the development of the project and the sale of the electricity generated by the project will depend on the business model, the size of the project, and the use to which the purchaser puts the energy (*i.e.,* direct consumption or resale). This chapter presents a general discussion of these issues on the federal level and discusses generally what procedures might apply on the state level. Of course, specific state-level regulation will vary from state to state. Before embarking on a particular course of action, it is highly recommended that a developer seek the opinion of qualified counsel, especially considering that many of the laws and regulations relating to these topics may be affected by recent legislation and ongoing rulemaking proceedings.

I. Federal Regulatory Structure Issues: PUHCAs, EWGs, and QFs. The Energy Policy Act of 2005 was signed into law on August 8, 2005, repealing in part the Public Utility Holding Company Act of 1935 ("PUHCA 1935") and enacting the Public Utility Holding Company Act of 2005 ("PUHCA 2005"). By opening the door to certain utility acquisitions and mergers that had been prohibited since 1935, PUHCA 2005 is likely to trigger a consolidation of the electric utility industry, which will present both challenges and opportunities for solar developers.

Under PUHCA 1935, nonexempt renewable energy project companies were subjected to extensive regulation by the Securities and Exchange Commission (the "SEC"). Although the SEC will no longer be regulating nonexempt renewable energy project companies (such as solar developers), PUHCA 2005 has (1) granted state regulators and the Federal Energy Regulatory Commission ("FERC") broad access to books and records of such companies and (2) provided for FERC review of the allocation of costs for nonpower goods or services between regulated and unregulated affiliates of such companies.

Solar project companies can obtain exemptions from these requirements. The two most common exemptions are for the project owner to obtain status as either an exempt wholesale generator ("EWG") or a qualifying facility ("QF"). Each of these categories is summarized below.

A. Exempt Wholesale Generator Status. In an effort to stimulate wholesale electric competition, Congress enacted the Energy Policy Act of 1992, which created an exemption from PUHCA 1935 for independent power producers that qualify as EWGs. EWG status is determined by FERC, and the EWG status begins once the independent power producer files an application with FERC. EWG status is available to any generator of electricity, regardless of size or fuel source, so long as such entity is exclusively in the business of owning and/or operating electric generation facilities for the sale of energy to wholesale customers.

Independent power producers should be aware of several issues associated with EWG status. First, the "exclusively own and/or operate" requirement mentioned above typically requires the creation of a special-purpose entity to own the solar power generation facility and sell its electrical output. Second, EWGs are restricted to wholesale sales and therefore cannot take advantage of retail sale opportunities in jurisdictions that have approved retail direct access, or would permit the solar developer to sell directly to retail consumers without becoming regulated public utilities as discussed below. Finally, EWGs are restricted in their ability to enter into certain types of transactions (such as leases) with affiliated regulated utilities.

Rates for wholesale power sales by EWGs are subject to FERC regulation under section 205 of the Federal Power Act. As a result, an EWG must apply for, and FERC must grant, market-based rate approval, *i.e.,* power-marketing rights, before an EWG can sell bulk wholesale power at market prices. FERC generally grants market-based rate approval, provided that the applicant and its affiliates (if any) demonstrate a lack of horizontal market power (electric generation) and vertical market power (transmission and other barriers to market entry) in the relevant markets, and have satisfied restrictions on affiliate abuses contained in FERC regulations. FERC has recently adopted new criteria for demonstrating satisfaction of these requirements, which should be reviewed with knowledgeable attorneys before filing for market-based rate approval. Once FERC grants market-based rate approval, the EWG will have ongoing filing requirements.

B. Qualifying Facility Status. The Energy Policy Act of 2005 changed the rules for QFs, introducing both risk and opportunity. Developers of new solar projects will want to familiarize themselves with these changes.

During the energy crisis in the late 1970s, Congress passed the Public Utility Regulatory Policies Act of 1978 ("PURPA") to encourage the development of cogeneration and small renewable energy projects, which are referred to as QFs. Before the passage of the Energy Policy Act of 2005, PURPA was important to renewable power developers for several reasons, one of which was the exemption for QFs producing up to 30 MW from most of the provisions of the Federal Power Act and from certain types of state utility regulations. The Energy Policy Act of 2005 (and FERC's interpretation thereof) has limited the applicability of these exemptions, making it more difficult for projects to obtain such exemptions. On the other hand, the Energy Policy Act of 2005's elimination of PURPA's ownership requirements is likely to generate new interest in utility ownership of QF facilities—increasing the value of both new and existing QF projects.

The Energy Policy Act of 2005 has also narrowed the advantages that renewable power generation QFs previously enjoyed compared to EWGs. First, as mentioned above, QFs no longer enjoy broad exemptions from the requirements of the Federal Power Act. Second, the Energy Policy Act of 2005 weakened the "must buy" obligation that allows QFs to require retail public utilities to purchase QF output at the utility's "avoided costs," *i.e.,* the costs the utility would have incurred but for the QF purchase. A utility may now petition FERC for an exemption from PURPA's mandatory purchase requirement if it can demonstrate that a QF in its service territory would have nondiscriminatory access to competitive wholesale markets for energy and capacity that meet certain standards. The potential loss of this "must buy" requirement could be significant because state-established "avoided cost" rates have often exceeded prevailing wholesale market prices, and such published rates have been an effective negotiating tool for gaining favorable pricing under non-QF renewable energy sale agreements. One clear advantage of QFs over EWGs is that PURPA does not restrict the ability of QFs to make retail sales to the extent such sales are allowed under state law. Another distinction between QFs and EWGs is that QFs are generally interconnected under state regulators' interconnection rules, which may or may not be advantageous for a particular project. A QF may have an option to interconnect under FERC rules.

II. State Regulatory Structure Issues: Regulation as a "Public Utility." An important issue of state regulatory concern for solar developers looking to make retail sales to third parties is whether such sales will result in the generation owner being regulated as a "public utility." (Note: If the sale is a wholesale sale (*i.e.,* a sale for resale), the sale will be governed by federal law.) Parties selling electricity to end-use customers are often heavily regulated as public utilities under state law, including regulation of rates and terms of sale for electricity. Typically, a solar generation owner will want to ensure that it is not regulated as a public utility if it sells power to third parties. Whether a solar generation owner is regulated as a public utility will vary from state to state, and potentially relevant factors include the number and type of customers supplied and the location of those customers compared to the location of the generation. In California, for example, generally an entity that sells electricity to third parties is a public utility regulated by the California Public Utilities Commission. In some circumstances, however, a solar generation owner can sell power to not more than two other corporations or persons for use on the real property where the electricity is generated, or on property immediately adjacent thereto, without being regulated as a public utility.[1]

III. Transmission and Interconnection Issues. To obtain project financing and gain access to markets for project output, solar project developers who are not interconnecting pursuant to a state's net-metering rules or pursuant to a state-jurisdictional distribution tariff discussed above must negotiate agreements to interconnect with the transmission system of the applicable transmission provider. In addition, a developer will need to obtain any necessary transmission service to deliver project output to the purchasers of that output. Most lenders and many investors will require evidence of executed generation interconnection and/or transmission service agreements as a condition of financing or project purchase. Most transmission providers are subject to jurisdiction by FERC, and therefore transmission service agreements and generation interconnection agreements are generally subject to regulation by FERC. Interconnection to utilities exempt from FERC interconnection rules raises unique questions, which should be considered when selecting a project site.

A. Generation Interconnection Agreements. A generation interconnection agreement is a contract between the generation owner and the transmission provider that owns the transmission system with which the project will be connected. FERC's Order No. 2003 establishes standard interconnection procedures, including a standard interconnection agreement for generators larger than 20 MW ("Large Generators"). Similarly, FERC Order No. 2006 establishes standard interconnection procedures, including a standard interconnection agreement for generators with a capacity of 20 MW or less ("Small Generators").

Generally, the two main purposes of interconnection agreements are (1) to identify and allocate the costs of any new facilities or facility upgrades that need to be constructed and (2) to set forth the technical and operational parameters governing the physical interconnection.

1. Interconnection Facilities and Cost Allocation. In general, before the execution of an interconnection agreement, the transmission provider will commission a series of interconnection studies, at

[1] Certain additional restrictions also apply to this exemption; whether the exemption applies depends on the particular situation.

the interconnection customer's expense, to determine what new interconnection and transmission facilities need to be constructed to accommodate the new generation facility, and the cost of such construction. Like any renewable energy project, if it is located in a remote place without existing transmission infrastructure, substantial new facilities and facility upgrades may be required.

Under FERC Order Nos. 2003 and 2006, the costs of interconnection facilities and distribution upgrades are paid for by the interconnection customer. Network upgrades (*i.e.,* upgrades to the transmission system at or beyond the point of interconnection) are treated differently, however, and transmission credits may be available to the interconnection customer. For example, if the transmission provider is a nonindependent entity, such as a vertically integrated utility, the interconnection customer will pay the upfront cost of any required upgrades, but the transmission provider will reimburse the interconnection customer by providing transmission credits. However, in certain transmission systems, such as those controlled by the Midwest Independent System Operator ("ISO") or the PJM Interconnection, the interconnection customer will not be entitled to all or part of this reimbursement. The nature of the network upgrade reimbursement (*i.e.,* partial or full) may also impact whether and to what extent tax gross-ups must be included in the payment by the interconnection customer.

Determining the point of interconnection for purposes of distinguishing between interconnection facilities and network facilities is an area of potential dispute between the parties. Transmission providers have an incentive to design interconnections in a manner that places the majority of the new facilities on the customer's side of the interconnection, thereby depriving the customer of a transmission credit to offset the costs of such facilities. Consistent with FERC precedent, only those facilities that are necessary to reach the point of interconnection are properly classified as interconnection facilities. In addition, for most interconnections of Small Generators, network upgrades are unusual. Agreements to reclassify interconnection facility costs as network upgrades, or vice versa, have not been found to be "just and reasonable" and have been rejected by FERC, although some transmission owners or operators continue to seek changes allocating additional costs to generators.

2. **Technical and Operational Issues.** Interconnection agreements address such technical and operational issues as reactive power factors, responsibility for electrical disturbances, metering and testing of equipment, exchange of operating data, and curtailment events. In some cases transmission providers attempt to impose technical requirements or control area services that go beyond those that FERC has typically approved. Solar developers should pay close attention to the technical requirements and control area charges proposed in the interconnection agreement and ask a knowledgeable attorney to review them for conformity with FERC policy. In connection with its adoption of standard procedures and agreements in its Order No. 2003, FERC began a separate rulemaking to establish certain technical standards applicable to interconnection of large wind generating plants that would be included in Appendix G of the Large Generator Interconnection Agreement. This rulemaking resulted in FERC Order No. 661, which is not applicable to solar projects or other intermittent resources other than wind. Nonetheless, FERC left the door open to take a similar approach for non-wind technologies. The rules address supervisory control and data acquisition capability requirements, as well as operational restrictions and requirements related to reactive power factors and low-voltage ride-through. Solar developers may wish to consider whether these provisions would help with transmission issues, as additional operational and technical experience is gained. Finally, the generator interconnection agreement may require compliance with applicable National Electrical Code ("NEC"), Institute of Electrical and Electronic Engineers ("IEEE"), and Underwriters Laboratories ("UL") standards or other state or local electrical code standards to ensure proper installation and use of certified equipment. Even if the generator interconnection agreement is silent on

NEC, IEEE, and UL standards, such standards may apply through state or local law and rules and should be considered before hiring contractors and beginning engineering.

B. State Interconnection Agreements and Net Metering. Distributed solar generation interconnecting at low voltage may be governed by state utility commission rules. Generally speaking, distribution-level interconnection is governed by state utility commission rules; however, if the distribution facilities to which the project would be interconnected are subject to a FERC-jurisdictional open access transmission tariff, and if the interconnection is for purposes of making wholesale sales, FERC's generation interconnection procedures would likely apply. In addition, if interconnection is with an entity that is not subject to state or FERC jurisdiction, then the developer may face additional issues and negotiations that are beyond the scope of this summary, but should be considered and discussed with a knowledgeable attorney.

If interconnection is governed by state utility commission rules, simplified procedures may apply for interconnection below a certain size threshold, including standardized form agreements specifically geared toward interconnecting solar distributed generation. Standardized agreements have the benefit of lowering transaction costs, though the ability to negotiate terms and conditions in the agreement is significantly reduced if not effectively prohibited. Interconnection procedures and agreements can in many cases be obtained by contacting the local utility. Generally, the state-level interconnection agreement will cover technical and operational issues, as well as the point of interconnection and responsibilities of the customer and utility.

Solar generation interconnecting at the distribution level may also be able to take advantage of net-metering rules. Net metering is an arrangement with a customer's utility whereby the customer uses its own installed generation to offset its energy usage and receives a credit for excess generation. Generally, a customer ends up with a lower utility bill for two reasons: (1) the net-metering arrangement allows the customer to offset its own electricity usage on an instantaneous basis with the solar power produced by its own solar generation system, thereby reducing the amount of power the customer must buy from the utility, and (2) the customer can deliver generation in excess of that used by the owner back to the utility and receive a credit from the utility for such generation. Whether the customer can roll forward or receive a cash payment for any credits for excess generation varies from state to state. Essentially, a net-metering arrangement allows the generation owner's meter to "run backward" when excess generation is supplied to the utility, offsetting the bill from the utility.

There are usually several restrictions that apply to the net-metering arrangement. Generally, state law and public utility commission rules will set forth the process by which an entity becomes a net-metering customer. State law generally sets forth the criteria for the type of customer (*i.e.,* residential, commercial, or in some states limited commercial or industrial customers) and the size of the distributed generation project eligible for the state's net-metering program, plus safety requirements and other program restrictions and requirements. Finally, state law and commission regulation may restrict the ability of a third party to own the renewable energy system used by a customer in that customer's local utility's net-metering program. In addition to eligibility restrictions, potential net-metering customers should look out for other potential issues in net-metering arrangements, such as high liability insurance coverage requirements, indemnification provisions, and other forms of customer charges associated with net metering. These charges may include interconnection charges, standby charges that the utility may assess to cover the costs of being on "standby" to provide power to the customer if the customer's generation does not produce energy when expected, and equipment charges for specialized metering or safety equipment.

Because net-metering laws and rules vary from state to state, a solar developer should consult a knowledgeable attorney about the applicable rules.

C. Transmission Service Agreements. Interconnection service or an interconnection by itself does not confer any delivery rights from the generating facility to any points of delivery. Therefore, unless the project owner is able to sell the output of the project at the point of interconnection with the transmission grid, the project owner will be required to obtain transmission service from one or more transmission providers to wheel project output to the purchaser. In addition, acquiring adequate transmission service is essential to obtaining debt or project financing on reasonable terms and conditions.

Jurisdictional transmission providers are required by FERC to offer transmission service on an open, nondiscriminatory basis pursuant to a transmission tariff that will govern the terms by which such service is provided. Upon receiving a request for service, the transmission provider will evaluate available transmission on its system and determine whether additional transmission facilities need to be constructed to accommodate the requested service. In major parts of the United States, the transmission provider is a Regional Transmission Organization ("RTO") or ISO rather than the actual owner of the applicable transmission facilities. Acquiring transmission service from nonjurisdictional transmission providers raises additional questions that depend on the nature of the entity, the scope of its transmission facilities, and other issues beyond the scope of this chapter.

Under FERC's general transmission pricing policy, generators pay the greater of the incremental costs or embedded costs associated with requested transmission service. Incremental costs refer to the additional system costs (*e.g.,* construction of new facilities and upgrades) resulting from the requested service. Embedded costs reflect an allocation of system costs to the various users, generally based on megawatts of service. A solar power project that is located far from adequate transmission infrastructure may require substantial system upgrades that will cause the transmission customer to pay an incremental cost that exceeds its pro rata share of the system costs. For these and other reasons, the customer may want to consider making a sale to a third party, rather than becoming a transmission customer of the transmission provider with which the developer interconnects.

These transmission pricing rules may be different if the transmission provider is an RTO. The rules of the existing and proposed RTOs may in fact be much more favorable to solar power generation than is FERC pricing. For example, an RTO may recover the fixed costs of the applicable transmission system from end users, with a generator facing only transmission congestion charges. The RTO also may eliminate rate "pancaking," which is the imposition of multiple transmission charges for use of more than one transmission owner's transmission facilities.

IV. Ancillary Services: Imbalance Charges, and Firming and Shaping Products. Project owners will be required under the transmission provider's tariff to provide or purchase transmission ancillary services, which are products designed to ensure the reliability of the transmission system. Of these products, generation imbalance service often poses the most difficult issues for renewable energy power operators with intermittent resources. Generation imbalance service is a product that allows a generator to deliver an amount of energy that differs from the amount it had prescheduled for an hour. Although solar energy is expected to be more predictable than wind energy, certain types of solar technology have more intermittency, which must be considered in terms of imbalance requirements and penalties. In addition, certain transmission providers are considering the imposition of a generator regulation charge, or other within-hour balancing charge to intermittent resources. This type of charge should be discussed with a knowledgeable attorney.

V. Greater Access to the Transmission Grid. FERC issued Order No. 890 on February 16, 2007 and Order No. 890-A (Order on Rehearing and Clarification) on December 28, 2007. Both reform open-access transmission tariff ("OATT") rules, and are designed, in part, as an effort to improve transparency of transmission service and reduce transmission barriers for new projects. These amendments may result in increased and improved access to the transmission grid for renewable energy developers. Order No. 890 is the first major reform of the OATT since it was enacted in 1996. A major obstacle to making more transmission capacity available is the fact that under current practice, long-term requests for service from a new generator may be denied based on the unavailability of transmission in only a few hours of a year, even though firm service is nonetheless available for the large majority of hours of the year. To address these concerns, FERC created two new options: conditional firm service and modified redispatch service. These two services provide new options for intermittent resources that can generally be constructed more quickly than the transmission upgrades necessary to deliver power on a firm basis.

Conditional firm service addresses the "all or nothing" problem transmission customers currently face. Conditional firm is a type of transmission service that renewable advocates have promoted as a partial solution to the lack of available firm transmission. Under this service, a conditional firm customer could enter a long-term contract for the capacity that is available on a path. The customer would have firm service except for time periods designated in the contract and would have priority over nonfirm service for the hours in which available transfer capacity ("ATC") is not available.

Modified redispatch service, which adjusts the output of various generators to allow transactions that otherwise would be blocked by congestion on certain transmission paths, is routinely used by integrated utilities (those with transmission and generation) to serve native load and network customers, and to make off-system sales. Order No. 890 requires transmission providers to offer and study the use of redispatch service to create additional long-term firm capacity on a transmission system. Under the rule, customers would agree to pay the costs of redispatch service during the periods when firm ATC is not available. As useful as these new services may be from an operational perspective, it is not clear yet whether acquisition of conditional service or redispatch service will be sufficient to obtain third-party financing for solar projects.

Even though the details of Order No. 890 are too voluminous to be adequately covered in this chapter, one important aspect of Order No. 890 is that it may increase access to existing transmission capacity and/or promote transmission expansion in key areas. Order No. 890 (1) establishes a consistent methodology to determine ATC and make certain elements of ATC more consistent, (2) requires transmission providers to participate in an open and transparent regional transmission planning process, (3) reforms pricing policies related to imbalances, credits for customer-owned transmission facilities, and capacity reassignment, (4) revises rules under which a transmission provider must provide rollover rights and require the provision of hourly firm point-to-point service, and (5) requires transmission providers to post all business rules, practices, and standards on the Open Access Same-Time Information System, and to include credit review procedures in their OATT.

VI. Reliability Standards. Recent developments in federal law have transformed historically voluntary standards into mandatory reliability standards with accompanying obligations and potential sanctions for failure to comply. In compliance with federal law requiring it to do so, FERC issued Order No. 672 on February 3, 2006, qualifying the National Electric Reliability Corporation ("NERC") as the continent-wide, FERC-certified Electric Reliability Organization ("ERO"), responsible for proposing and enforcing mandatory reliability standards. As the ERO, NERC is responsible for monitoring and improving the reliability and security of the bulk electric system and, to do so, NERC has the authority to propose and enforce mandatory reliability standards and assess fines upwards of $1 million per day for noncompliance. Pursuant to the Federal Power Act, all reliability standards must be just, reasonable, not unduly discriminatory or preferential, and in the public interest. NERC has delegated to designated regional entities the authority to monitor and enforce the reliability standards. In addition to their delegated responsibilities, regional entities may also enforce region-specific reliability standards.

The reliability standards may apply to users, owners, and operators of the bulk electric system, and the specific applicability of a particular standard is specified in each standard. The regional entities are tasked with maintaining a Compliance Registry, which lists organizations against whom the reliability standards are enforceable. If an organization fails to register on the Compliance Registry, then the regional entity may register the entity itself. The Compliance Registry lists organizations by function, and compliance is analyzed by reference to function-specific reliability standards.

As is most relevant to solar developers, NERC requires that certain generator owners and generator operators register. A generator owner is an organization that owns generating units, and a generator operator is an organization that operates generating units and supplies energy. There are minimum requirements before a generator owner or generator operator is required to register, and a solar developer should consult with a knowledgeable attorney regarding such requirements. Though initially exempted from registration, QFs are now required to comply with the reliability standards as well.

Overall, the mandatory reliability standards pose a challenge to an industry that recognized voluntary standards for many years. Given the breadth of the reliability standards and the punitive sanctions attached, industry participants must take the appropriate steps to determine whether they should register with the applicable regional entity, to understand each function, and to implement a comprehensive program that will track and ensure compliance.

VII. Summary. Solar developers range in size and business model greatly and the regulatory and transmission-related issues are highly dependent on the unique circumstances presented by the particular project. Solar developers should be mindful of the various state and federal regulatory requirements, as well as the opportunities presented by the regulatory oversight in these areas.

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Law Practice

Seth Hilton practices complex commercial litigation, as well as arbitration and mediation, with an emphasis on energy litigation. He has appeared in federal and state courts throughout California, and has successfully argued before the Ninth Circuit Court of Appeals. Seth has represented regulated entities, independent power producers, and consumers in a wide variety of litigation and regulatory proceedings.

Seth has significant experience representing clients before the California Public Utilities Commission. He has represented qualifying facilities, independent power producers, energy service providers, and direct access and utility customers in numerous proceedings before the Commission, and had advised clients concerning the Commission's imposition of cost responsibility surcharges on direct access customers and departing load.

Prior Legal Experience

Law Clerk to the Honorable David V. Kenyon, United States District Court for the Central District of California (1995-1996).

Representative Litigation Matters

Represented an energy service provider in a dispute with Southern California Edison Company over payment of PX credits;

Represented both energy service providers and customers in disputes concerning direct access service contracts, including successful defense of $69 million breach of contract claim filed against an energy service provider;

Represented wholesale power providers in an interpleader action brought by the Colorado River Commission of Nevada concerning alleged breaches of retail power contracts by its retail customers;

Represented a wholesale electricity generator in a dispute with the California Independent System Operator concerning interpretations of the ISO tariff and summer reliability agreements;

Education

J.D., University of California, Davis, School of Law, 1995

- Order of the Coif
- Senior Articles Editor , U.C. Davis Law
- Review Articles Editor, U.C. Davis Journal of International Law

B.A., cum laude, Harvard College, 1992

Admissions

State bar of California

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Representative Regulatory Matters

Represented wholesale electricity generators in the California Public Utilities Commission's rulemaking concerning enforcement of generator operation and maintenance standards adopted pursuant to Public Utilities Code § 761.3;

Obtained exemptions from the Direct Access Cost Responsibility Surcharge and Pacific Gas & Electric's Energy Recovery Bond Charges for a direct access customer;

Represented energy service provider in the Commission's resource adequacy proceeding;

Represented energy service providers before the California Public Utilities Commission on direct access issues such as direct access suspension and recalculation and payment of PX credits.

Professional Activities

In 2003, Seth was appointed to the California State Bar's Standing Committee on Federal Courts. He is also a member of the American Bar Association, the Bar Association of San Francisco, the Conference of California Public Utility Counsel, and the Power Association of Northern California.

Presentations and Articles

"California Global Warming Solutions Act of 2006 and the Electric Energy Industry," Western Power Supply Forum II (December 2006); "The California Global Warming Solutions Act of 2006," Environmental Liability Reporter (November 2006); "The Impact of California's Global Warming Legislation on the Electric Utility Industry," The Electricity Journal, Vol. 19, Issue 9 (November 2006); "California Global Warming Solutions Act of 2006 and the Electric Energy Industry," Infocast Webinar (September 2006); "CPUC Adopts Backstop Cost Recovery Rules for Transmission Necessary to Meet California's RPS Goals," *EnergyPulse* (July 2006); "DC Circuit Court of Appeals Holds District Court Has Initial Jurisdiction Over PURPA Dispute," *EnergyPulse* (July 2005); "Ninth Circuit Declines Review of BPA Decision to Trigger Rate Adjustment Clause," *EnergyPulse* (July 2005).

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Law Practice

Jennifer Martin is a member in the Portland office of the Energy Group and Renewable Energy Initiative. Her practice focuses primarily on representing renewable energy developers on a variety of energy-related matters before state and federal agencies. She has experience before state public utility commissions in the Western United States and the Federal Energy Regulatory Commission representing both utility and independent power producer interests. Jennifer also advises developers on power purchase and interconnection agreements and transmission service issues.

Prior Legal Experience

Judicial Clerk, Minnesota Supreme Court (1999-2000); Senior Note and Comment Editor, *Journal of Gender Race and Justice* at University of Iowa College of Law (1998-99); summer law clerk, Stoel Rives (1998); research assistant, Professor David Baldus, University of Iowa College of Law (1997-99); clerk, Circuit Court of Cook County (1993).

Representative Matters

Representation of energy clients including wind and solar developers in administrative litigation and rulemaking matters before the Federal Energy Regulatory Commission (FERC), including Section 205 applications and approvals for FERC-jurisdictional sales, QF and exempt wholesale generator issues, market rate authority, Section 203 transfer of jurisdictional assets; investigations into compliance, and other issues.

Representation of renewable energy developers in drafting and negotiating power purchase and renewable energy credit (REC) agreements and in obtaining interconnection and transmission services.

Representation of energy efficiency clients on state regulatory and renewable energy credit (REC) issues and drafting customer participation agreement.

Professional and Community Activities

Oregon State Bar Public Utility Law Section; American Bar Association Public Utility Law Section; Energy Bar Association; Multnomah Bar Association; Western Power Trading Forum; Oregon Women Lawyers; volunteer instructor, YMCA, Northern Ireland (1995-96).

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Education

J.D., University of Iowa College of Law, 1999

B.A., English and gender studies, University of Notre Dame, 1995

St. Patrick's College, University of Notre Dame foreign study program, 1992-93

Admissions

State bar of Utah, Oregon

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Law Practice
Janet Jacobs is an associate in the Corporate practice group. She has experience in the areas of corporate governance, acquisition of businesses, international commercial contracts and international regulatory compliance. Her clients include private corporations with extensive overseas business relationships, and suppliers of consumer products. Janet also has litigation experience with import/export issues, product liability, real estate and construction matters.

Prior Legal Experience
Associate, Alschuler, Grossman & Pines, Century City, CA; associate, Valensi, Rose & Magaram, Century City, CA; associate, Forsyte Kerman, London, England.

Representative Experience
Managed due diligence for Seattle-based client in its acquisition of certain assets of Ignition Mortgage Technology Solutions, Inc., a wholly-owned subsidiary of Freddie Mac.

Managed due diligence and ancillary documents for United Kingdom-based client in its cross-border, multi-state acquisition of assets of MCK entities.

Managed due diligence and ancillary documents for Seattle-based software client in its sale of assets.

Manage negotiations and referral agreements between major international financial institutions and Seattle-based client with international insurance brokerage business.

Manage international regulatory compliance for Seattle-based client with international insurance brokerage business.

Professional Activities
Member, Washington State Bar Association, Business Law and International Practice Sections; member, Law Society of England and Wales.

Community Activities
Member, Virginia Mason Foundation Committee; advisor, Board of Directors, Team Survivor Northwest.

Awards
Smith-Doheny Legal Ethics Writing Award (Notre Dame Law School).

Education
J.D. with honors, University of Washington, 2003

LLB with honors, London School of Economics and Political Science, London, England, 1976

Admissions
State bars of Washington, California

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Chapter Six
LEX HELIUS: THE LAW OF SOLAR ENERGY
—Permitting and Land Use—

Erin L. Anderson

It is not enough to have the sun and the land to construct a solar energy facility. One also needs the permits to use the land for energy generation. Even with the current favorable regulatory environment regarding renewable energy, the successful project developer knows that every element of the facility must have the right approvals to be legally constructed and operated. Failure to obtain the correct permits can be costly in terms of construction delays related to stop work orders; foregone revenues, tax credits, and commencement of accelerated depreciation; and, in today's regulatory climate, quite possibly penalties for failure to meet renewable portfolio standards.

I. Facility Permitting Rules. Energy facility permitting is traditionally a state or local jurisdiction function, unless the facility is constructed on federal land or involves other federal action.

A. State Energy Facility Siting. Many states have established administrative boards, councils, or committees that review and, in most cases, approve or deny the siting of energy facilities. At least one state, Washington, allows only the agency—the Energy Facility Site Evaluation Council ("EFSEC")—to make a recommendation to the governor about whether to approve an energy facility. The final decision under Washington's regulatory framework rests solely with the governor. In other states with siting councils, such as Oregon, Ohio, and Massachusetts, the agency itself renders a decision to approve or deny an application to site a major energy facility.

States differ greatly on whether the state will assert jurisdiction over energy facilities. Many states, such as Oregon, require energy facilities that will generate a defined amount of power to undergo siting by the state agency while allowing facilities generating amounts under the threshold to be sited by the local jurisdiction in which the facility is proposed. Other states, such as Washington, have full authority to site any size energy facility, but do so only at the election of the applicant. Some states, such as Texas, provide for no such state jurisdiction.

Once a solar developer has determined whether the state it has chosen for its project has a siting council, it must determine whether the siting council has jurisdiction over solar facilities. Siting councils are largely a product of the thermal energy facility construction wave of the 1960s and 1970s. At that time, many state legislatures set out to define the types of facilities that could be sited and typically included only the commercially viable technologies of the day. In many state siting frameworks, renewable energy technologies, such as solar, geothermal, and wind, were not even mentioned. As renewable energy has emerged as a viable industry, states have begun to add alternative energy sources to those that fall within a siting council's jurisdiction. The savvy solar developer will check the state's jurisdictional requirements carefully to determine whether the solar development will be subject to the state siting process and, if so, whether there are exemptions from or waivers for state siting process requirements.

B. Local Energy Facility Siting. In states in which there is no siting council or the council lacks jurisdiction over solar facilities, the siting decisions are made by local jurisdictions, most often township and county governing bodies. Commercial solar facilities, even those proposing to use the most modern technology, often require vast tracts of land. They may also require large amounts of water. For these reasons, as well as the cost of land and aesthetics, solar facilities are typically located outside of urban areas.

Many local governments are quite adept at solar facility permitting. Capital facility permitting is a traditional function of the local jurisdictions within which facilities are generally built, whether they be water treatment, wastewater management, or energy generation plants. As such, nearly all communities have some type of planning or community development department with skilled staff to assist in processing and reviewing permit applications. The solar facility developer should contact the planning, community development, or utility or public works department for the jurisdiction within which a proposed project lies to assess what local processes and requirements exist for a solar facility.

C. Federal Energy Facility Siting. Solar facilities proposed for construction on federal land fall within the jurisdiction of the agency charged with the land's management, most often the U.S. Department of the Interior's Bureau of Land Management ("BLM") or the U.S. Department of Agriculture's Forest Service. Federal land management policies encourage the development of solar energy on public lands. BLM issues right-of-way authorizations for solar installations, and the Forest Service issues special use permits.

D. Choosing a Siting Process. If the developer has a choice of siting entities, time considerations loom large in making a decision about which process to pursue. Many state siting councils establish a time frame within which a siting decision must be made. The rules and the exceptions thereto should be examined before electing a process. Additionally, siting councils typically have experienced staff who should be consulted for firsthand observations on how smoothly and expeditiously prior siting matters have proceeded. These same state siting entities typically have greater technical resources for review of an application, which often results in a more thorough review. The downside, however, is that this often translates into a longer permit review process than one conducted by a local jurisdiction.

To the extent a developer has a choice of permitting agencies, there are several other factors to be weighed in choosing a siting path. The more extensive resources that are available to a state agency can result in expert review of a proposal. Local agencies often lack the financial resources to hire various experts, particularly in an emergent field such as commercial solar energy generation. The local jurisdiction may handle this lack of staff expertise by requiring that the developer fund or reimburse the local agency's costs expended in reviewing a project. A comparison should be made to determine the difference between state and local application fees and processing and review costs.

Another critical factor involves the political nature of energy facility siting decisions. Although solar facilities generally have less immediate visual impact than nuclear cooling towers, smokestacks, or wind turbines, any energy facility can evoke strong sentiments in a community. Siting of a contentious project, when conducted by a state agency, tends to be more objective and less politicized than a town hall-style local forum. When making the decision about which path to choose, the developer should consider who will be staffing the permit review, who will be making the decision, and what remedies are available under each permitting regime if a negative result is obtained.

II. Environmental and Land Use Considerations. Depending on the forum in which an application for a solar facility is processed, a variety of environmental and land use rules will be applied to evaluate the proposal.

A. Federal Environmental and Land Use Review. Approval of a facility on federal land through the issuance of a right-of-way or special use permit (as well as other federal agency approval actions) necessarily involves application of environmental review under the National Environmental Policy Act ("NEPA"). The scope of a NEPA review is broadly designed to assess the environmental impacts of a proposed development and the potential significance of those impacts. This includes assessment of project development impacts to both the built (*e.g.,* roads) and the natural (soil, wildlife, and ground and surface water) elements of the environment. Predictably, the more significant the potential for adverse environmental impacts, the more closely the project will be scrutinized. It follows that the higher the level of review, the longer the process will take. Projects that are categorically exempted from NEPA by federal regulations can result in near-immediate review. However, nonexempt actions must go through an Environmental Assessment, usually a four- to six-month process, to determine whether the solar project will cause no significant impact (finding of no significance) or will likely cause significant environmental impact, which triggers the preparation of a full-blown Environmental Impact Statement ("EIS"). Preparation of an EIS is a lengthy process that involves considerable and multiple public and agency review opportunities, and is rarely completed in under a year. Although NEPA itself is only a procedural and evaluative tool without substantive standards or requirements that must be imposed on a project, the resulting analysis of impacts, alternatives, and potential mitigation serves as the basis for imposition of conditions on projects.

B. State and Local Environmental and Land Use Review. Because our nation is a federation of states, each state puts its own imprimatur on environmental and land use review. State and local agencies typically conduct environmental reviews during the permit issuance process, whether the project calls for a siting permit issued by a state or a local permit (typically a conditional use permit).

Some jurisdictions, such as California (under the California Environmental Quality Act), conduct a comprehensive environmental review of project impacts contemporaneously with the review of the permit itself for land use and regulatory consistency. The process in such states is patterned after the federal NEPA framework and is commenced through a separate application for environmental review of the proposed project. The environmental review is conducted as an overlay to the permit review. Because environmental review regulations contain public notice and participation requirements, compliance with those requirements can add considerable time to the review process. The same procedural review is applied by local jurisdictions when reviewing a permit. The developer should consult agency staff and, if necessary, legal counsel early in the process to ascertain the responsibilities of the developer as the review progresses. There are also timelines that accompany review processes. Clarification should be obtained to determine whether timelines set (1) a maximum processing period, such as the 12-month review process promised by the Washington EFSEC; or (2) a minimum period before the agency may act but not a maximum time limit for rendering a decision.

Some solar resource-rich states, such as Nevada and New Mexico, do not conduct contemporaneous environmental review processes at all. Although such states do not undertake environmental review of a permit as a separate process, some states and local jurisdictions will consider environmental issues as part of the permit application itself. Oregon, for example, has adopted criteria, applicable statewide, that address environmental issues. Solar facility developers in Oregon will encounter a host of statewide land use goals with substantive prohibitions built into them. These land use goals apply to both the state's Energy Facility Siting Council and every state's political subdivision. Such goals are stringently applied. Although there are processes to seek exceptions therefrom, those requests are reviewed narrowly and are infrequently granted. Oregon has a rich history of publishing appellate decisions of land use appeals, and legal counsel should be able to assist in determining whether the criteria for a land use goal exception have been interpreted previously, which can provide guidance for difficult siting decisions.

In addition to environmental review, applications to develop solar facilities will undergo permit review to determine whether a solar facility is in compliance with the jurisdiction's approved land use laws. The first phase of such review is nearly always to assess whether the use is allowed outright or conditionally at the proposed location. Most often, this is accomplished by reviewing the zoning code to ascertain whether the solar facility is an outright, predetermined compatible use with other uses in the zone, or is a conditional use. If the use is conditionally allowed, the environmental assessment undertaken either as part of the permit review or separately through a NEPA-like process generally provides a host of conditions that can be imposed on the facility that render it more compatible with its zone.

Additional land use laws that may apply to a solar project include surface and ground water quality and quantity protection, as well as shoreline regulations. The genesis for many of the state-administered laws is the federal Clean Water Act, although states such as Washington and California have also enacted shoreline protection laws that superimpose more review and additional permits before a solar facility may be permitted.

For most local permitting decisions, the body empowered to approve a project is a board of county commissioners or a legal equivalent or, less commonly, planning agency administrators.

C. Streamlining the Process. Some jurisdictions are beginning to recognize the value of consolidating the permitting processes for several renewable technologies. For example, a county in Washington has conducted an areawide EIS for wind energy facilities to create an overlay zone in certain areas for wind development. While the environmental impacts for wind development were being assessed, the ramifications of solar energy facility development were considered. As a result, both technologies have been established as permitted uses in certain zones. A solar facility proponent should meet early with the local planning authority to review the compendium of land use laws and determine which permits will be required, as the opportunity to reduce permitting costs is significant.

Energy generators and developers are also taking steps to reduce the time and cost of solar facility permitting by co-locating several renewable energy generation facilities on a single site. An example of this is found at the Wild Horse Wind Power Project in Washington. The wind energy facility owner is a utility subject to the state's Renewable Portfolio Standards. The facility occupies over 6,000 acres on which are placed only 121 turbines. Because wind turbines occupy a vertical plane and solar panels a horizontal plane, there was room for the two technologies to compatibly occupy the same acreage. Both share transmission facilities, reducing capital facility costs. The environmental impacts for both the solar and wind facilities were constrained to the same site, resulting in a more expeditious and less obvious environmental review process.

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Erin Anderson practices as Of Counsel in the Natural Resources and Land Use practice group.

Erin has extensive experience in representing property owners, municipal entities, and developers, including energy facility developers, in permitting major projects. Erin's experience on behalf of property owners includes planning, negotiating development agreements, and successful defense of issued permits on appeal. On behalf of public sector clients, she has negotiated water supply, delivery, and use policies and agreements; annexation and development agreements for small and large-scale planned mixed development projects; and has guided major capital facility projects from inception through SEPA, innovative cost-sharing negotiations, alternate procurements and permitting, through completion of construction. Erin has been successful in both bringing and defending appeals brought under Washington's Growth Management and Land Use Petition acts. Erin also represents wind energy facility developers in both local land use and Washington Energy Facility Site Evaluation Council proceedings.

Prior Legal Experience

Before joining Stoel Rives, Erin worked for 11 years at the central Washington firm of Cone Gilreath, where she served as the Cle Elum city attorney and South Cle Elum town attorney, and represented various regional governmental agencies and districts. While representing Cle Elum, she assisted in creating strategies to enable economic growth, manage utility rates, and promote capital facilities construction in conjunction with the development of Suncadia, a 6,000-acre major four-season destination resort adjacent to Cle Elum. From 1993 to 1996 she was employed as an associate at Halverson Applegate, P.S. in Yakima, where she worked extensively on zoning, facilities permitting, and impact fees issues under various statutory regimes.

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SCM Group USA, Inc. v. Protek Machinery Co., 136 Wash. App. 569, 150 P.3d 141 (2007); Lathrop v. State Energy Facility Site Evaluation Council, 130 Wash. App. 147, 121 P.3d 774 (2005); J.R. Simplot, Inc. v. Knight, 139 Wash. 2d 534, 988 P.2d 955 (1999); Tugwell v. Kittitas County, 90 Wash. App. 1, 951 P.2d 272 (1997).

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Chapter Seven
LEX HELIUS: THE LAW OF SOLAR ENERGY
—Financing a Solar Project—

Patrick G. Boylston

As in many other chapters of this book, when discussing financing, a distinction needs to be drawn between a smaller, distributed generation solar photovoltaic ("PV") installation and a very large, utility-scale solar thermal installation. The financing of utility-scale projects is a well-known and traditional area of practice for law firms with regulated utility and energy practices. The issues presented in financing a utility-scale solar generation project are not substantially different, at their core, from those encountered in financing a utility-scale wind project, or a "dinosaur" combined-cycle, gas-fired cogeneration or coal burning facility. The presence of substantial tax benefits in the wind and solar areas makes a difference, but, at their heart, these are facilities that have substantial revenue-generating capabilities under long-term power purchase agreements with large public utilities, and the agreements are likely to include capacity payments in addition to the pure purchase of electric output from the facilities.

A power purchase agreement for the output of a distributed generation solar PV facility is a necessary component of each transaction and will be an important consideration for any source of financing. However, the revenue generation potential of a small solar PV facility is not the only consideration to make a project financeable. Thus a "bad" power purchase agreement may make it impossible to obtain financing.

The relatively less important role of project revenues highlights that distributed generation solar PV installations are primarily tax-advantaged investments, just as low-income housing, historical preservation credits, new market tax credits, and other tax subsidies have made other types of tax-advantaged projects popular focuses of development and industries dedicated to those specific types of projects over the past 25 years. Much has been written in many other sources about the federal investment tax credit for solar development and the availability of accelerated depreciation. These are significant drivers for the financing of distributed generation solar PV projects. Equally significant, however, is the availability of Renewable Energy Certificates, referred to as "RECs" or "green tags" (see Chapter Eight, Monetizing the "Green" in Green Power: Renewable Energy Certificates), and state-level subsidies, state tax credits, and other forms of incentives available to support solar PV projects.

I. The Role of Federal Tax Benefits in the Financing of Solar Projects. There is no question that distributed generation solar PV projects would not be built if there were not substantial federal tax benefits available. Standing alone, the intrinsic cost structure of these projects and the generally constrained prices at which output can be sold do not make them economically viable sources of generation under existing market conditions. Tax benefits are a principal driving force behind solar PV and will continue to be for some time. So it is helpful to look at just how difficult it is to do the federal tax analysis of a distributed generation solar PV facility. The answer is, as to some tax issues, not very, and as to other tax considerations, fairly difficult.

Most financing sources have three basic questions relating to the tax benefits and other economic aspects of the transaction. First, how much? Second, how certain? Third, when? These questions reflect the financing sources' primary concerns in deciding whether to invest. One primary concern is being able to put on a spreadsheet the expected economic return from the project based on a combination of tax benefits, power sales revenues, and other revenues (such as from the sale of RECs), state tax credits, or special program payments (such as from the California Solar Initiative ("CSI")). A second primary concern is the risk analysis of the project, in particular, how certain it is that the benefits reflected on the spreadsheet will actually be realized. A third primary concern is when the expected benefits will become available. In part, this reflects the various midyear and other conventions under the Internal Revenue Code (the "Code"), which provide that the amount of certain specific tax benefits at the end of the tax year depends on when during the tax year those benefits became vested, such as half-year conventions regarding depreciation deductions. However, the timing question takes on added significance when there are questions about when and if a key tax component of the transaction, such as the federal Energy Credit, is set to expire in the near future. Then the financing source may become concerned about whether the project can be physically completed before the end of the current authority, and what economic risk mitigation must be built into the terms of the financing to protect the financing source if the project does not reach the "magic date" before the credit expires. In terms of federal tax issues, the magic date is the "placed in service" date, which may or may not be the same as the "commercial operation date" or "final completion date," which are critical dates in the power purchase agreement and the installation agreement.

II. How Much and How Certain? The elements of a distributed generation solar PV installation, whether ground-mount or rooftop, are relatively simple. Basically, there are solar panels, racking or a support structure, inverters, wiring, metering, and telemetry. The federal Energy Credit is determined by reference to the basis for tax purposes of the qualifying equipment. Again, in general terms, any portion of the solar PV installation that uses solar energy to generate electricity is qualifying equipment. There is debate, from time to time, regarding whether this definition includes meters and telemetry in qualifying equipment, given that those simply measure and report the output of the facility, and there is debate regarding whether dual-use items, such as the support poles in a mixed-use solar PV/shaded parking arrangement, qualify. Although any particular tax advisor may have his or her own view on these questions, once the specific identifying equipment has been designated, the determination of the basis of that equipment and the related Energy Credit is not difficult. One complicating factor, which will arise due to the importance of subsidies to the economic viability of a solar PV installation, is how the project-owning entity will deal with adjustments required as a result of receiving federal, state, or local program subsidy payments to facilitate the project. The Code specifies a corresponding reduction in the basis of the qualifying equipment, but that does not appear to be the only option for dealing with the receipt of subsidy payments.

Taken together, these relatively simple requirements will tend to make the tax analysis regarding how much federal Energy Credit and accelerated depreciation relatively easy. In addition, there is not much, if any, uncertainty regarding the availability of these deductions in most situations.

III. Timing. The analysis of when during a tax year the federal tax benefits will become available is difficult because it must take into account factors that tend to be beyond the control of the developer or the financing source. There are many questions complicating this determination. Will the panel manufacturer be able to meet

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the requested delivery schedule? Is there sufficient time to reasonably expect that the installation will be placed in service before a significant deadline passes (such as the expiration of the current add-on 20 percent federal Energy Credit for solar, whether that expiration date is likely to be extended, and if it is, when the law extending it will be passed and go into effect)? Will the installer run into adverse weather conditions, a labor dispute, an inability to get the required materials because it was waiting for a better price to increase its margin, or any of the other well-known construction risks?

Consequently, although the financing source will find it necessary to make an estimate of when tax benefits will become available, the developer can expect a constant stream of requests for updates and status reports as the financing source attempts to stay on top of its risk position. This is one of the reasons many tax investors will refuse to provide construction financing. They are only interested in the tax benefits when there is a very high probability they will actually be available on or before a date certain. These financing sources do not want to bear construction risk or have these risks impact their anticipated return on the transaction.

IV. The Role of Project Revenues in Financing a Solar Project. As noted briefly above, project revenues are not a primary driver of the economics of a distributed generation solar PV installation. However, they are important because they provide the gap filler between (1) the financing source's return from tax benefits and other revenue sources, such as RECs, and (2) the investor's desired overall return on the project. Another way of saying this is that in the current environment, tax benefits, subsidies, and other revenues are not sufficient to provide a return that is acceptable to today's financing sources. Project revenues must bridge that gap. Whether project revenues will be sufficient to fulfill that role is difficult to project because the price at which any specific buyer for the project's output is willing to buy is dependent on a wide variety of factors completely separate and independent from the actual costs of the project.

The first touchstone for attempting to predict the range in which output from a specific solar PV facility can be sold is the current market rate for electricity in that location. The second touchstone is what the local utility's recent record has been on rate increases. The third touchstone is what time-of-day, "solar-friendly," or other tariff adjustments the local utility has made recently or has publicly announced it intends to make in the near future. It is very clear from these touchstones that a major driver in determining the sale price of output from a specific solar PV facility is its competition, the cost of electricity delivered by the local utility.

Many believe that in light of global warming concerns and other environmental factors, the cost of solar power should not be dependent on any competitive price from a local "dinosaur" utility. In our experience, the actual purchaser of solar PV output rarely feels this way. Although the decision may take into consideration environmental benefits, it also has a substantial economic component. The purchaser may be willing to pay some premium for solar power, but not a disproportionate premium to its cost of buying power from the local utility. In addition, there are certain unknowns regarding the performance, maintenance, and longevity of any specific installation that weigh into the calculation of whether it is "worth it" to have a solar installation on-site or whether to take the easy route, which is to just flip the switch and take delivery from the local utility. One thing that must be conceded is that, in America, our local utilities are very good at maintaining a ready flow of electricity, available at the customer's demand.

Therefore, the financing source's three questions—how much, how certain, and when—cannot be fully settled until there is a negotiated and signed power purchase agreement. This is a major reason why, before seriously considering an investment in the project, most financing sources will want to see the terms of the power purchase agreement and will want to know that the power purchaser is creditworthy and has agreed to the price structure over the term of the power purchase agreement and to damages due upon a breach.

V. The Role of Other Revenues in the Financing of a Solar Project. After federal tax benefits, another primary driver of solar PV economics is the other sources of cash or economic benefits available to the project. As previously mentioned, solar PV projects need to be heavily subsidized to be economically viable. The cost per watt of a solar PV project is significantly higher than that of other renewable generation sources. In part, this is because of the higher costs of the basic components, primarily solar panels, and, in part, it is a consequence of the relatively limited output capacity of current solar panels. Major technological developments in the efficiency and manufacturing costs of solar panels can and will change this equation, but for the foreseeable future it is uncertain whether progress will be such that it substantially changes the relative cost per watt of solar PV versus other renewable generation sources.

These "other sources" take a variety of forms and are determined on a state-by-state basis. Some states, such as Oregon, Hawaii, North Carolina, and New Mexico, have chosen to offer a state income tax credit based on the cost of qualifying renewable equipment. In 2007, Oregon changed its standard from 35 percent of the qualifying costs to 50 percent, the reason being that at the 35 percent level, the tax credits generated were not sufficient to put solar PV projects into the economically viable category. Theoretically, 50 percent puts the project across that line. Other states, such as California, chose to implement a direct payment subsidy system (the CSI). Again, how the program is structured makes all the difference in how useful it will be in practice. The CSI program provides a decreasing level of direct cash subsidy as commitments for solar projects are made and applications for CSI payments are submitted to the state. Sufficient applications have been submitted to drive the subsidy level far down from its initial level. However, the CSI payments were committed without regard to when the project would actually be placed in service. Consequently, it is likely that a number of high-level CSI commitments have been made for projects that continue to be uncertain due to the basic difficulty in putting a solar PV project in place—even with a high CSI commitment in hand.

Other revenue sources include the wide variety of grants and subsidized loans that are being made available for renewable resource generation projects by states, federal agencies, and local-level environmental organizations. Using Oregon as an example, the local-level Energy Trust of Oregon makes grants for the initial development efforts related to renewable projects. The typical grant is not sufficient to pay for a major portion of the project, but does make it possible to get through some of the planning, design, and initial power purchase agreement phases necessary to put together a package that potential investors will take seriously. However, these subsidized sources of financing have consequences for the federal tax analysis of the project.

An additional source of other revenue is the sale of RECs, which are discussed in Chapter Eight, Monetizing the "Green" in Green Power: Renewable Energy Certificates.

At the end of the day, the financing source is going to again ask the three questions as to the other revenue or economic benefit sources for the project. The financing source may be willing to be flexible on when signed commitments from these sources become available, but the deadline will certainly be before closing and usually before the execution of a firm commitment to fund the project.

VI. The Interaction of Federal Tax Benefits, Project Revenues, and Other Revenue Sources in Financing a Solar Project. In today's environment, the final conclusion of whether or not a specific project is financeable will depend on the firmness and level of each of the three factors discussed above. Neither the federal tax benefits alone, the project revenues alone, nor the other revenue or economic benefit sources alone are sufficient to make the project economically viable, and consequently financeable. Even though economic viability for solar projects has already come down to a very, very thin margin, there is no room for any one of these three factors to be significantly depressed if the project is going to receive financing. A very low power price to accommodate the purchaser may push the project below the acceptable economic return threshold. A significant decrease in available federal tax benefits due to the receipt of large portions of subsidized grants and loans may also push the project below the acceptable economic return threshold. An inability to receive sufficient revenues from the sale of RECs or an insufficient level of state subsidy through state tax credits or state subsidy payments may do so as well.

These three factors exist independent of each other, but must be viewed in combination to determine whether the project is economically viable. Each must meet the financing source's scrutiny on its own, and then must also meet that test in the aggregate with all of the three factors considered together. Unless and until something substantial happens to reduce the cost per watt of solar energy, there are no fat margins to allow compensating for a problem in one area of the project's economic performance with premiums in another area. These are difficult projects to make pencil out to an acceptable return level for financing sources.

VII. So, Whom Should You Be Approaching for Financing? The markets appear to be undergoing a significant period of adjustment and evolution (or devolution) in connection with the financing of solar energy projects. Within that universe, utility-scale solar projects are likely to be less affected by these changes. Distributed generation facilities are likely to be more affected.

With respect to distributed generation projects, size appears to be critical. To date, the process of putting a solar PV project together has been extremely time-consuming and has involved an atypical amount of education and acclimation as to the issues involved. This substantial upfront time commitment is being played out in an environment of limited returns, as discussed above. Consequently, expect an increasing desire on the part of all participants to reduce the amount of upfront effort involved and to simplify the documentation and transaction substantially.

"Big" projects, probably on a scale of two MW or greater, will continue to have access to large investment banks and probably some private equity capital sources of financing. The economic value of the federal tax credits generated by these projects make them attractive to funds that provide high-income-generating entities with tax credits and losses to apply against their other taxable income. However, the general economic picture can influence the appetite of these financing sources for any particular tax year, sometimes in unforeseen ways.

"Middle-level" projects are currently in a fairly difficult arena. They do not have the scale to attract large investors on a stand-alone basis, but are too expensive to be financed solely through subsidized sources. Banks are increasingly becoming interested in looking at renewable energy generation, including solar, as new business opportunities. However, federal banking regulatory issues may operate to discourage some banks from taking an investment equity position in the project entity. In other words, they are concerned that they cannot become the tax investor without crossing the lines governing their banking operations. Many banks do have subsidiaries and related entities that can make investments not subject to the "basic" banking regulations. Though the ability to make these investments usually requires that some distinct facts apply, such as the project being in a recognized economically disadvantaged area, private equity firms and smaller investment banks may have some increasing interest in projects of this size, but the thin returns described above may also keep them on the sidelines.

"Smaller" projects, and some midsize projects, appear likely to go one of three ways. They will have access to financing through some local source of capital established specifically to encourage the development of solar generating resources in their geographic area; they will approach one of the number of funds being established that will do the entire project on a turn-key basis, including equity financing; or they will be able to access some form of owner financing.

The local capital source is likely to have subsidized sources of funding, but with the specific limitation that funding can only be applied to renewable energy generation within a defined area of concern. The larger fund, which will do the entire project, is likely to require as a quid pro quo that its terms be accepted without significant negotiation and that only its (more or less canned) documents can be used. In essence, this is a trade-off requiring acceptance of a one-size-fits-all and take-it-or-leave-it approach to avoid the large commitment of upfront time, effort, and cost typical of putting together any solar project—regardless of size. Depending on the power purchaser's and building or site owner's (the "host") interests, it may or may not be a good trade-off. The owner financing approach will usually involve an established business with an owner or executives who have personal ties to high-net-worth individuals in the community. This group will put together a private investment vehicle geared to take advantage of the tax and other economic benefits available from the project. (In the context of technology venture capital, this is usually referred to as "angel investor" financing.)

One factor likely to influence whether local banks become more active in this market is whether tax advisors become comfortable that the IRS's recent pronouncement in Revenue Procedure 2007-65 dealing with wind projects is equally applicable to solar and other renewable projects. This pronouncement states that the IRS will recognize the validity of "flip model" transactions in the wind area if certain safe-harbor requirements are met. The one that appears to give local banks the most trouble is that the transaction cannot include a "put" feature in which the tax investor can require the purchase of its interest in certain circumstances. Local banks, in particular, like put features because the features give them a way to limit their risk exposure. The IRS was expressly concerned that the investments in the wind transaction covered by Revenue Procedure 2007-65 bear real risk for the investors.

VIII. What Terms Can I Expect to See in the Financing Documents? In addition to the standard terms typical in any financing, there are certain provisions that are more or less unique to solar PV financing. These relate to occurrences during the Energy Credit recapture period, the allocation of risk upon the occurrence of certain events, and how the price for any purchase option is calculated.

The federal Energy Credit has a recapture period of five years after the facility is placed in service. Many documents in solar PV transactions will draw a bright line at the fifth anniversary after the "placed in service" date, providing that certain terms apply before the fifth anniversary date and other terms apply after the fifth anniversary date. However, if only a partial year of accelerated depreciation is available in the first year, the full federal tax benefits are not used up until about the 5.5-year mark. Consequently, many documents now provide that the benchmark for the shift in terms is the sixth anniversary of the placed in service date. This can become more complicated if the project has been placed in service in component pieces capable of independent operation, but the result is that the benchmark date will be measured from the placed in service date of the final piece.

Allocation-of-risk provisions in solar transactions are different because the potential events that can cause an economic loss for the project owner are fairly unique in the universe of tax-advantaged investments, and because of the complicated role that the interaction of tax credits, project revenues, and other sources plays in the economic viability of the project. For example, federal Energy Credits vest upon the project's being placed in service. So long as the project exists, there is no recapture. Project revenues and other sources of revenues or economic benefit, however, typically are measured by the actual output of the facility. If it is not producing electricity or there is a reduction in the production of electricity, there is a reduction in the available amount of these economically important items. Because all three items are important for the investor to recover its return, a negative impact on any of the three has a negative impact on the entire project's viability.

Numerous events can occur that may negatively impact project revenues or other sources of revenue or economic benefit. For example, suppose the building owner needs to repair the roof area where the solar installation is located. It is likely that the installation will have to be moved aside or even removed from the roof for some period of time. During that period there will be no output, so there will be no power sales or RECs generated to fulfill any REC sales contracts. In addition, there is the actual cost of moving or removing the facility from the rooftop. Someone will bear these real costs; the purpose of the risk allocation provisions is to define who that is. Similarly, if the purchaser simply decides to stop buying the output of the facility, the economic loss is not just the lost revenue from the sale of electricity. The loss calculation must also take into account any other revenue sources that depend on the facility actually generating and delivering electricity.

In some states where net-metering regulations allow the pass-through of "excess" generated output to the local utility, there may be a means of mitigating these risks without allocating them between the project owner and the power purchaser or the host. To determine whether this is even a viable alternative, though, requires a careful examination of the net-metering rules applicable to the specific local utility that owns the grid meter for the project. Some states allow or require the local utility to buy the excess output from the facility at market rates or avoided cost (which is less than market rate). Some states may allow the local utility to decide whether it wants to allow that "sale" rather than making it mandatory; some states may provide that any excess generation from the solar facility simply creates a credit for the purchaser ("making the meter run backward") but does not allow that credit to be monetized. In those states, the local utility does not have to pay anything for the excess electricity delivered to it through the meter. At the end of the year there is a true-up, and if the purchaser has a credit on its side of the ledger, that credit goes away and the meter is effectively reset to zero for the new year. The investor has a very legitimate interest in how this will play out because it has a direct impact on the investor's risk profile.

In the absence of any net metering "out," the documents are likely to provide that after the operation of the facility is disrupted due to causes within the control or responsibility of the purchaser or the host for some negotiated period of time (for example, seven days each calendar year), either the purchaser or the host becomes responsible for paying the project owner the full economic cost of lost revenues. This includes the lost revenues from electricity sale, as well as any lost revenues or subsidies from local tax credits, REC sales, etc. In addition, some REC sales contracts have a provision requiring the project owner to reimburse the REC purchaser for the failure to deliver a certain level of RECs during each year of the contract. If the disruption of generation would trigger this cost to the project owner, it is likely that the project owner will want to pass that cost through to the purchaser or the host.

There are also risks present in rooftop distributed generation solar PV projects arising directly from the fact they are located on top of buildings, and risks exist for ground-mounted solar PV installations where the ground is condemned, partitioned, subdivided, etc. Suppose the building roof has not been well maintained and can no longer bear the weight of the solar installation. Local law will require that it be removed. The project owner will want the host to pay the related costs, including lost revenues, lost REC sales, costs of removing the installation, etc. A similar potential problem arises if the building is sold and a new owner does not want to have the solar installation on its roof, or tenants change and the new tenant does not want to agree to the same power purchase agreement terms as the former tenant. Each of these possibilities needs to be considered, and some means of removing the risk or mitigating the potential damages to be incurred by the project owner should be built into the documents.

IX. Dealing with Purchase Option Pricing. One unique aspect of distributed generation solar power is that most small and midsize project power purchasers who are also the hosts strongly want to own the installation itself at some point. They have read the public news stating that solar installations appear to have a useful life well in excess of the typical 20-year term of most power purchase agreements and want to continue to benefit from the installations' output after they have finished paying the project owners for their electricity. Only time will tell if this also proves true with larger commercial installations that are being marketed as "being just like your utility—all you have to do is pay a bill and forget about everything else."

For those purchasers and hosts who are strongly committed to one day owning the installation on their property, the timing and price of their purchase option is an important consideration in being willing to enter into the transaction. The basic standard for the required price of any purchase option is established by the Code. It cannot be less than the fair market value of the installation at the time the purchase option is exercised. However, there is disagreement and debate regarding what elements constitute the fair market value of the installation at any particular point in time. One approach is to (i) obtain an appraisal of the value of the equipment in a secondary market; (ii) add the discounted present value of power and REC sales that the project could expect for the remainder of the term of the power purchase agreement; and (iii) deduct the cost of removing the installation from its present location and restoring the site to the required condition. A second approach ignores the remaining cash flow from the project and stipulates that only the value of the equipment itself (again, with or without removal costs) is relevant in determining the fair market value of the project. This particular approach is clearly relevant when the purchase option is exercisable only at the end of the power purchase agreement term when there is no expected remaining stream of revenues. A third approach provides for a valuation of the equipment and a discounting of the remaining cash flows from the project, and includes a designated "buyout price" determined at the time the power purchase agreement is entered into. Undoubtedly there are also many more reasonable approaches to determining what the purchase option price will be in any particular situation.

There is an equal lack of clarity in how power purchase agreements determine when the purchase option can be exercised. Revenue Procedure 2007-65 provides that the IRS does not want to see any purchase option exercisable during the first five years, equivalent to the recapture period discussed above. Most participants accept this as a reasonable threshold. After the five- (or six-) year period, however, the dates are all across the board. Some power purchase agreements provide that the purchase option may be exercised any time after the threshold date. Some agreements provide that the purchase option may only be exercised after the investor has received a specific target rate of return, whenever that happens. Some agreements provide that the purchase option may only be exercised on the 10th, 15th, and 20th anniversaries of the facility's delivering output, with the 20th year equaling the end of the term of the power purchase agreement. Some agreements provide that the purchase option can only be exercised upon the expiration of the power purchase agreement. What timing is available to the party who wants to have a purchase option depends, to some extent, on how the investor views its position. If the target return for the investor requires that it realize all of the available tax benefits, all of the projected power sales, and all of the revenues or economic benefits available from other sources, then the exercise of a purchase option is going to defeat the investor's realization of its desired return unless the purchase option price includes something to "make the investor whole" on these items. If the target return can be realized without all of these items, then there will likely be more flexibility in how the purchase option price is determined. The major point here is that there is currently no single clear market standard on this issue.

X. Summary. Determining whether a particular proposed solar PV installation will be financeable requires quantifying a variety of interrelated and moving parts. In this respect, the financing of solar is not particularly different from the financing of many other types of investments. What makes solar somewhat different is the nature and character of some of these parts and the current situation in which there is not much room for offsetting a problem in one area of the project with headroom in another area. Except for the situation in which an installation will be put on a building owned by a power purchaser who is willing to basically finance the project itself and take all of the tax benefits for its own use, this is not a "do-it-yourself" type of project.

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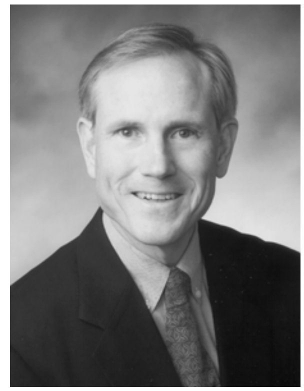

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Patrick Boylston is a business lawyer, concentrating on issues relating to renewable energy development, interaction with municipal entities and the financing of solar photovoltaic installations, corporate debt and public infrastructure. Patrick's varied experience is particularly useful in assisting renewable energy projects which will involve some level of public participation, either through power purchases, public financing or siting on public facilities.

Patrick represents independent power producers and power marketers on resolving business and credit issues in power sales agreements. Working with public and private power purchasers, developers, site hosts and financing sources, Patrick has been involved in solar photovoltaic projects in service or under development in California, Colorado, Oregon, Washington and Hawaii. He also provides technical advice on business, financing and development issues to all Stoel Rives' offices pursuing solar project engagements.

Primarily a corporate, partnership and individual tax lawyer Patrick has become more deeply involved in a variety of tax related and motivated financing transactions. These include traditional corporate finance and business law, working largely with lenders to merger and acquisition transactions and export oriented timber products companies, municipal bonds and finance. Patrick's experience working with local governments has been invaluable to energy sector clients entering into power purchase and development contracts with local government and municipal utilities.

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Member, National Association of Bond Lawyers; past member, American Bar Association Section of Taxation; member, Oregon State Bar Local Government and Taxation Sections; associate member, Oregon Municipal Finance Officers Association; Oregon School Business Officers Association.

Seminars and Articles

A frequent presenter at seminars and conferences on topics such as: negotiating agreements for solar photovoltaic projects; financing biomass projects; financing small scale wind development and tax based financing for Indian tribes. Coauthor; Tax-Exempt Financing chapter, Health Law CLE Manual (published in 1992 by the Oregon State Bar and updated in 1998); coauthor, "Municipal Finance Notes, Traps for the Unwary: Disappearing Statutes and Disappearing Contract Terms", Vol. 8, No. 1, Government Perspectives, (Oregon State Bar, 1989).

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Chapter Eight
LEX HELIUS: THE LAW OF SOLAR ENERGY
—Monetizing the "Green" in Green Power: Renewable Energy Certificates—

Stephen C. Hall, Richard L. Goldfarb

I. Introduction. This chapter explains the basics of Renewable Energy Certificates or "RECs." It discusses the different types of markets to which a solar power developer might sell its RECs, examines criteria that may affect the eligibility of your facility to sell its RECs, and explains verification and tracking, and how they can lead to maximizing the value from your REC sales.

II. How RECs Help Finance Your Renewable Energy Project. Financing is usually the biggest challenge facing independent developers of solar energy projects. A profitable solar energy project typically relies on multiple sources of revenue. Electricity sales are obviously the most important, but state and federal incentives, including tax benefits, are important revenue streams as well. In addition to the revenues from electricity sales and the various governmental incentives, RECs can be an important stream of revenue for a solar energy project. Investors require long-term certainty to give maximum credit to the cash flows from incentive programs. Because REC markets are volatile, investors and lenders prefer to finance a contracted cash flow. Therefore lenders or investors will generally not rely on revenue projections from REC sales absent a long-term REC sale agreement.

III. Introduction to Renewable Energy Certificates. Renewable energy consists of two distinct commodities that may be sold together or separately. These two commodities are (i) electricity and (ii) environmental attributes. The environmental attributes (*i.e.,* the "green" in green power) include the emissions benefits associated with the renewable energy source (*e.g.,* the reduced emission of greenhouse gases) and the renewable fuel source (*e.g.,* solar power, wind power, etc.).

Because there are two commodities, it is possible to

- sell the electricity with the environmental attributes,
- sell the environmental attributes separate from the electricity, or
- bundle the environmental attributes with so-called "brown power" and resell them as green power.

Because of this ability to unbundle the environmental attributes from the electricity, the buyer of the REC may be different from the buyer of electricity. As will be discussed below, this can present both challenges and opportunities.

Although there is no universal definition of a REC, a REC typically represents the environmental attributes from one megawatt hour ("MWh") of electricity from a renewable energy source, and includes the reporting rights to the greenness of that MWh of electricity. In most cases, a contract between the seller of the RECs (*e.g.,* the power producer or an aggregator) and the buyer of the RECs will define the environmental attributes. If RECs and electricity are unbundled, it is also necessary to define the environmental attributes in a power purchase agreement to ensure that the buyer of the electricity knows that it is not obtaining the environmental attributes as well.

IV. An REC by Any Other Name. The market for RECs has been around for less than a decade. Thus it is not too surprising that although there is general agreement about the concept of selling the environmental attributes separately, there is less agreement on what those attributes should be called. RECs are also referred to as:

- Environmental Attributes
- Green Tags
- Renewable Energy Credits
- Green Tickets
- Tradable Renewable Energy Certificates
- Tradable Renewable Certificates
- Green Certificates

V. Types of Markets for RECs. REC prices are determined by market forces. In general, there are two markets for RECs: compliance markets and voluntary markets.

A. Compliance (or Mandatory) Markets. Many states have passed laws requiring certain utilities to include a minimum amount of renewable energy in the portfolio of generating resources serving the utility's load. These laws are referred to as Renewable Portfolio Standards or "RPS." Most state RPS programs allow the utilities subject to the RPS to comply, at least in part, through the purchase of RECs. This means that the the buyers of RECs in a compliance market are generally utilities, and the utilities are purchasing the RECs to meet these state law requirements. The markets for RECs in RPS states are generally strong, and RECs that qualify for the various RPS programs will usually fetch the highest prices in these states.

At this time there is no federal RPS, and the RPS requirements differ significantly from state to state. Each state RPS program determines whether RECs are tradable and defines what constitutes a REC that will satisfy its own particular standards. As a result, the buyer's specifications for RECs will be defined by the state standards. Some states specify that the generation source must be located within the state or a particular region. Some states require the electricity to be delivered to the state or a nearby region to meet the state standard. Some states require their utilities to purchase the electricity and REC together. Knowing your state's RPS, if it has one, and the RPS of nearby states will be important in valuing your RECs.

In most cases, RECs will fetch the highest prices in states with an RPS that permits tradable RECs and that has what is known as a "solar carve-out." A solar carve-out is an RPS requirement that a certain percentage of the electricity acquired by utilities subject to the RPS be generated by a solar energy resource. Colorado, New Mexico, Nevada, and New Jersey currently have solar carve-outs.

In compliance markets, buyers tend to care only about whether the source of renewable generation meets the state RPS requirements. In some cases, the structure of a compliance market may limit the flexibility of sellers. For example, the state RPS may specify a certain geographic area, or state policies may favor certain types of generation. In addition, utilities making long-term purchases of RECs may impose credit requirements on sellers in the form of a letter of credit, a corporate guaranty, or other arrangement, as utilities tend to buy RECs only from sources that will satisfy their RPS needs for the long term.

B. Voluntary Markets. The states that do not have an RPS are referred to as voluntary markets. There are also voluntary markets in states that do have an RPS among buyers who are not subject to the RPS. In these markets, sales are driven by customer demand. Voluntary buyers may be motivated by a desire to "do the right thing," or to enhance or affirm corporate identity or environmental awareness. Buyers include marketers, brokers, businesses, nonprofit organizations, and individuals. Businesses and individuals buy RECs because more revenue drives more renewable generation into the power pool, which means less fossil fuel burned and reduced emissions of greenhouse gases.

Increasingly, marketers and brokers bundle RECs into more usable products. For example, it may be difficult for a small solar developer to get the attention of a direct consumer of RECs. A marketer or broker—a classic middleman—may have a customer who needs far more RECs than a single solar development will produce. By bundling together a large number of such small developers' RECs, the marketer or broker will be willing to deal with the small producer in order to satisfy the large customer's demand.

Examples of voluntary REC markets include utility "green pricing programs," such as those offered by PacifiCorp (Blue Sky), Sacramento Municipal Utility District (Greenergy), Portland General Electric (Clean Wind and Green Source), Puget Sound Energy (Green Power Program), and WE Energies (Energy for Tomorrow). Other voluntary markets are corporate purchasers, such as Aspen Skiing Company, HSBC-North America, Johnson & Johnson, Starbucks, and Whole Foods Market.

Voluntary markets are driven by consumer demand or state-mandated utility programs. In most cases, the prices are lower than for compliance markets. However, buyers are often less concerned about geographic location and may be more affected by the type of technology involved. This offers greater flexibility for sellers while imposing fewer credit requirements on them. However, the ambiguous rules, uncertainty of future demand, and lower prices create challenges for the REC seller in a voluntary market. In particular, because of the often short-term nature of most voluntary purchases, lenders and investors are generally unwilling to rely on voluntary demand as security for financing.

Credit requirements are often relevant to buyers in voluntary markets. It is important for the seller to know that the buyer will have the wherewithal to pay, particularly if the buyer is a marketer or broker (who may be a substantial business, or may be a person with a cell phone and an email address), or a nonprofit organization. The same requirements that a utility might impose on a seller of RECs are also germane to enhancing the credit of such buyers: letters of credit, cash deposits, or guaranties.

VI. Is Your Renewable Energy Facility Eligible to Sell RECs? A threshold issue in any REC sale is the question of whether the seller has title to the environmental attributes from the facility. Some of the factors that may disqualify the sale include whether the output from the facility is being sold to the local utility under a QF arrangement, whether the electricity is being sold to an entity that is counting this electricity for compliance purposes, whether the RECs have already been committed or sold under another agreement, and whether the environmental attributes are being used to satisfy a separate compliance requirement.

There are untested questions concerning RECs, such as what happens to a REC when a remote seller goes bankrupt, and would a REC that is sold in advance of its generation be subject to the rights of secured creditors of the generator? There is essentially no case law about RECs, and thus generators and consumers alike may be taking risks they cannot measure.

VII. Verification of RECs. A common requirement in long-term contracts is third-party verification. To be able to sell your RECs for top dollar, it is important to have them certified and verified by an independent third party. These are typically private organizations whose methods have come to be accepted in the marketplace as sufficient to ensure that the environmental attributes promised are, in fact, delivered. Third-party verification generally confirms the quantity, renewable type, and vintage of the RECs, and also that no double counting has occurred. Double counting occurs when renewable power is sold more than once (as either RECs or renewable power) or when the renewables are also used to meet a renewable portfolio standard or other federal, state, or local regulatory requirement. It is also considered double counting if emissions credits/allowances or other environmental attributes are disaggregated by the renewable power/REC supplier and sold separately. The verifiers typically charge a fee for the use of their logo as proof of their verification of the existence of the RECs and perform periodic audits (for which a fee is also charged).

VIII. Tracking. Many states with an RPS are requiring the use of a REC tracking system, such as WREGIS, NEPOOL GIS, or PJM. These electronic systems track each REC from “birth” to retirement. Each unit of generation is assigned a unique ID that includes its attributes, such as the date the energy was generated, facility location, date facility went online, type of renewable, emissions profile, and eligibility for different RPS programs. As REC trackers such as WREGIS expand, it is likely that more states will allow greater use of unbundled RECs for compliance with state RPS requirements.

IX. Conclusion. RECs can be a valuable revenue stream for a solar developer. Selling an intangible attribute into a growing and evolving market for cash is a great way to enhance the viability of a project. RECs can be particularly valuable where they can qualify utilities to satisfy RPS standards in a state, but can also be sold into voluntary markets, though those markets present credit and other challenges. The sale of RECs is subject to minimal regulation at the moment, but that should change over time. There are legal issues that might be faced as RECs become a more important part of the development of renewable energy.

Stephen C. Hall

Law Practice

Stephen Hall is a partner in the Portland office of Stoel Rives LLP, and is the chair of the Firm's Renewable Energy Initiative. He has acted as counsel to renewable energy developers (solar, geothermal, wind and biomass), independent power producers, major utilities, investment banks, power marketers, large industrial users of electricity, and developers of green buildings in a variety of business transactions, litigation and regulatory proceedings. His renewable energy practice includes drafting and negotiation of power purchase agreements ("PPAs"), including solar PPAs, and advising sellers and buyers of environmental attributes, including green tags, renewable energy certificates ("RECs"), verified emission reductions ("VERs") and carbon offsets.

Stephen is a frequent speaker at energy industry conferences on legal issues related to climate change and greenhouse gas legislation, emissions trading, and the development and financing of renewable energy resources.

Prior Legal Experience

Director, UBS Warburg Energy LLC, (2002-03); Senior Counsel, Enron North America Corp. (2001-02); associate, Stoel Rives LLP (1997-2001); law clerk, Chief Justice James H. Brickley, Michigan Supreme Court (1996-97).

Professional Activities

Executive Committee, Oregon State Bar Telecom and Utility Section; American Bar Association Public Utility Section; Energy Bar Association; Multnomah Bar Association.

Community Activities

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J.D. *cum laude*, Harvard Law School, 1980

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Law Practice
Richard Goldfarb practices primarily in the commercial, banking, corporate, and securities law areas. He has developed expertise in connection with complex commercial transactions, including foreign and domestic sales, secured transactions for banks, other financial institutions and borrowers, and in essentially all aspects of the Uniform Commercial Code. Richard also serves as a general corporate counselor.

Professional Activities
Member, Washington State Bar Association UCC Committee, Business Law Sections of the Washington State Bar Association and the American Bar Association; member, Alaska Native Law Section of the Alaska Bar Association; chairman emeritus, Lawyer Referral and Information Services Committee of the King County Bar Association (KCBA); former member, KCBA Neighborhood Legal Information and Referral Clinic Committee, Lawyer Referral Service of the Washington State Bar Association, KCBA Volunteer Lawyers Services Committee and Delivery of Legal Services Committee.

Civic and Charitable Activities
Former Vice President--Legal, Boys and Girls Clubs of King County; member, Seattle Public Library City Librarian Search Committee; President, Friends of the Seattle Public Library (1994-96); member, Harvard-Radcliffe Club of Western Washington.

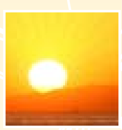
Publications
Co-editor and Co-author, UCC Revised Article 9 Deskbook, Washington State Bar Association (2003); Co-author, “Why We Love the UCC,” Washington State Bar Association (1998); author, “Article 2A-Leases,” Washington Commercial Law Deskbook (2d ed.) (1995); author, “Article 2A-Leases,” Montana Commercial Law Handbook (1996); co-author, “The New UCC Articles,” Washington State Bar Association (1995); “Developments in Leveraged Buyouts,” Northwest Securities Institute (1990); “Basic Commercial Forms,” King County Bar Association (1990); “Acquisitions Out of Bankruptcy,” Washington State Bar Association (1985).

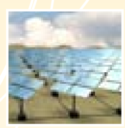
Background
Law clerk to Justice Reuben Goodman, Massachusetts Appeals Court (1980-81).

LEX HELIUS

The Law of Solar Energy

A Guide to Business and Legal Issues





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